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BRITISH BIRDS

WITH WHICH WAS INCORPORATED IN JANUARY, 1917, "THE ZOOLOGIST."

AN ILLUSTRATED MAGAZINE DEVOTED
CHIEFLY TO THE BIRDS ON THE BRITISH LIST

EDITED BY

H. F. WITHERBY M.B.E. F.Z.S. M.B.O.U. H.F.A.O.U.

ASSISTED BY

Rev. F. C. R. JOURDAIN M.A. M.B.O.U. H.F.A.O.U.

AND

NORMAN F. TICEHURST O.B.E. M.A. F.R.C.S. M.B.O.U.

Volume XXVI

JUNE 1932 — MAY 1933



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JUNE 1,
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A pair of Ivory-Gulls at their nest at Palander Bay, North East Land.
(*Photographed by C. T. Dalgety.*)

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THE IVORY-GULL IN SPITSBERGEN.

BY

C. T. DALGETY

(Plate 1.)

My first view of the Ivory-Gull (*Pagophila eburnea*) was on July 30th, 1927. We were on the east of the Spitsbergen group, passing through Freeman Strait between Edge Island and Barents Island. The sun shone brilliantly, touching the ice with myriad hues of blues and greens. Wooden-winged Fulmars were wheeling everywhere. Glaucous Gulls, Kittiwakes, Little Auks, and Brunnich's and Mandt's Guillemots were continually passing by. Then three Ivory-Gulls appeared. Their extreme whiteness was the first thing to strike me; "white as snow" is a common expression, but here was something whiter than snow.

During the next month we continually saw Ivory-Gulls flying and feeding along the shore, but never did I see one on the water. When feeding on the shore, they would run forward as each wave receded, always jumping back to avoid being wetted by the next. Since that year I have seen many more Ivories, but I have never seen one on the water. They are essentially birds of the ice, if the ice goes away they become birds of the shore. Their beautiful appearance is not in keeping with their habits, for they are the vultures of the arctic; their food consisting of remains of seals and bears, carcasses killed by bear or man, and any other fish or animal remains.

I first saw a breeding colony on August 16th, 1927. The nests were on a very small dolerite cliff, at an altitude of 1,700 feet, within 150 feet of the top of a steep high scree slope which formed one side of a valley running six miles down to the sea. There were many nests and twenty old birds, but only two young, which were almost fledged. They were white with black spots about the size of one's finger nail.

In 1930 and 1931 I went again to Spitsbergen, and saw more of these birds. On the mainland of West Spitsbergen we often saw them in Liefde Bay, on the north, and occasionally in Ice Fjord, in the centre. At the latter place an odd bird or two would appear in stormy weather, but in Liefde Bay there were usually two or three. Here I shot one which proved to be a male with a large incubation patch.

In Pallander Bay, a branch of Wahlenburg Bay in North East Land, we found a breeding colony which we visited on July 6th, 1930, and July 8th, 1931. This colony was at an

altitude of 1,000 feet, nearly at the top of a cliff that overlooked the bay. Here there were over thirty pairs. In 1930 half the occupied nests contained single eggs and half contained pairs. In 1931 one nest contained three eggs while only three had single eggs which were all fresh; the remainder had pairs.



Cliff with Ivory-Gull Colony, Palander Bay, North East Land.

(Photographed by C. T. Dalgety.)

In 1930 there was exceptionally little ice, while in 1931 there was quite as much as usual. It seems possible that this may have been the cause of the smaller clutches in 1930, as the Ivorys get most of their food on the ice. There was, in most cases, a slight difference in the time of incubation of eggs from the same nest.

The nests were mostly built of land plants, moss, grass, saxifrage, etc. ; but a few were mere hollows in the grassy turf. This turf was only present where the Ivories were nesting, and appeared to consist of old nests which had taken root in the remains of still older ones. Many of the nests were



Ivory-Gulls and Nests on Great Island.

(*Photographed by J. H. McNeile.*)

under the shelter of overhanging rocks. One or two Kittiwakes had nests among the Ivories, and there was a large colony of Kittiwakes close by. The cleanliness of the Ivories made a striking contrast with the filth of the Kittiwakes ; there was no dirt on or near the nests of the former. This made the colonies distinguishable from some way off on the

ice of the bay; the grey Kittiwakes were difficult to see against the whitewashed rocks, but the white Ivories showed up plainly against the dark rock and green turf. Mandt's Guillemots were nesting in the cracks amongst the Ivory colony.

On July 20th, 1930, we found a colony on Great Island, to the north-east of North East Land. Here, at an altitude of about two hundred feet and within a few yards of the foot of the ice cap, there were eleven nests on a dry stony ridge. These nests were made entirely of moss, the only land plant available on that barren island. Five nests contained two eggs each, some of which were only slightly incubated, while five contained single eggs, all of which were much incubated. One nest contained one chipping egg and one young one, covered with a uniform pale grey down.

Twenty-one birds were here and all stayed near the nests, screaming and occasionally stooping at us. A few others passed by without demonstration, so presumably did not belong to this colony. I have only once seen a bird arrive at or leave a colony, this was at the colony on Edge Island, where there were only two young between twenty old birds. Other observers have noticed the same thing, and it is a mystery how the incubating bird or the young get sufficient food. The bird shot in Liefde Bay tends to show that incubation is by both sexes, and that the one which is not sitting spends a long time in search of food. But at this Great Island colony there was only one bird missing from the eleven pairs.

Though birds continually stooped within a few inches of me at all the colonies I visited, they never actually struck me. Other observers have been struck repeatedly.

While I was trying to photograph the birds at Pallander Bay in 1931 there was a snowstorm which helped neither the photography nor the climbing. But it did allow us to read the cause of the disappearance of one clutch of eggs. The nest was on a stone not more than two foot square jammed in a right angle corner of the cliff. Above the nest was more than twenty feet of sheer rock, below it more than forty, with no foothold for even a bird. The new snow lay over all the nest except where the bird had been sitting. Why no eggs? Then we saw the tracks of an arctic fox in the snow on the edge of the nest. How the fox had got there was even more puzzling. Then we found the tracks where he had looked over the cliff and seen the nest, then gone away for thirty



Ivory-Gull at the nest, Palander Bay, North East Land, during a snowstorm.
(Photographed by C. T. Dalgety.)

yards and down a hole. He must have known of this hole before, and used it for getting other meals. The fox is the only enemy of the Ivory-Gull, for Skuas and other Gulls are easily outflown and the only bird of prey in Spitsbergen is the Snowy Owl, which is very scarce.

In 1927 one of the ship's crew caught an Ivory by means of a hook baited with bear's blubber. It lived on deck, wearing jesses and tied to a boot last, and soon became very tame. It was given to the London Zoo but did not live long.

The eggs vary in ground-colour from a dark brown to a pale putty colour, with varying tinges of yellowish or greenish, some being a greyish-green with little or no trace of brown. The shell markings are leaden or lavender-grey. The surface markings, which may be blotches, spots or streaks, range from a brown that is almost black to a pale khaki colour. The different combinations of these colours gives a large variation of types.

The average measurement of 37 eggs is 60.03×42.66 mm.

The maximums and minimums being :—

	Length	Breadth
Max.	$\begin{cases} 64.1 \\ 58.25 \end{cases}$	$\begin{cases} \times 42 \\ \times 44.5 \end{cases}$ mm. ,,
Min.	$\begin{cases} 54.2 \\ 57.3 \end{cases}$	$\begin{cases} \times 41.6 \\ \times 40.8 \end{cases}$.. ,,

NEW BRITISH BIRDS AND ALTERATIONS TO THE BRITISH LIST.

BY

H. F. WITHERBY

SINCE the publication of the *Practical Handbook* we have given two lists of additions and alterations to the systematic list contained in the last part of that work and reprinted in the *Check-List* (see *Brit Birds*, Vol. XXII., pp. 101 and 102, and Vol. XXIV., pp. 22-25). Further alterations have now been agreed upon by the British Ornithologists' Union List Committee (*Ibis*, 1932, pp. 94-100) and these are set out below, while a new bird to the list has been recorded.

In order to make it more easy for readers to bring their *Check-Lists* up to date a complete list of all alterations and additions since the publication of the last part of the *Practical Handbook* and the *Check-List* is given at the end of this article.

ADDITION.

258A. THE PALLID HARRIER.—*Circus macrourus* (Gm.).

ACCIPITER MACROURUS S. G. Gmelin, Nov. Comm. Acad. Petropol., XV., p. 439, Pls. VIII., IX. (1771—Voronezh to R. Don).

Circus macrourus (Gm.), P. Grimshaw, Scot. Nat., 1932, pp. 1-2.

A male Pallid Harrier was obtained at Fair Isle, Shetland, on May 8th, 1931, by Mr. George Stout, and was sent to the Royal Scottish Museum. Mr. Percy Grimshaw, who records this event (*Scot. Nat.*, 1932, pp. 1-2), states that the bird was on the island for at least two weeks prior to its being killed and that its stomach contained the greater part of a Sky-Lark and a Meadow-Pipit. The skin, which I have had the pleasure of examining in company with Mr. N. B. Kinnear, has some brown feathers on the nape and the back of the crown and here and there on the wing-coverts, while there are some feathers on the under-parts with very fine mesial streaks, and the bird appears to us to be in second summer plumage.

The male Pallid Harrier is very much like the male Hen-Harrier in colour, except for the grey bars on its white rump. Some are rather paler on the upper-parts, but many cannot be distinguished in this respect from the Hen-Harrier. In size it resembles the Hen-Harrier, while Montagu's has a slightly longer wing and a smaller tarsus than either. In wing-formula, however, the Pallid Harrier is much like Montagu's, both having the fifth primary (and often also the fourth) shorter than the Hen-Harrier, and thus having more pointed wings. Further, as in Montagu's, the fifth is not emarginated on the outer web and the fourth not on the inner web, as they are in the Hen-Harrier. It is thus easy to distinguish the Pallid Harrier from the Hen-Harrier in the hand, and, since the females and young of all three are very much alike, it is fortunate that there is a ready means of

stinguishing the Pallid from Montagu's by the position of the emargination of the outer web of the second primary, which in Montagu's is visible well beyond the primary-coverts (15-30 mm.), while in the Pallid Harrier it is, as in the Hen-Harrier, hidden by the coverts, or sometimes just visible at the tip of the covert



Rump and tail of adult male Pallid Harrier.

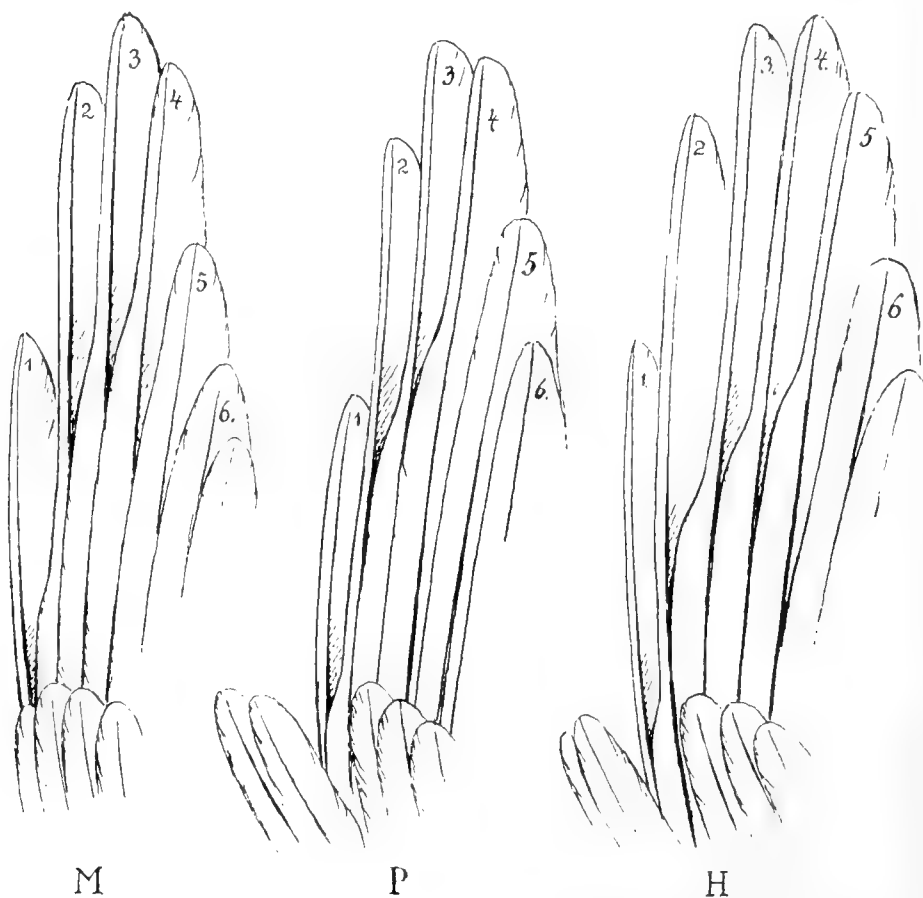
The following are the main differences in the adult males of the three species.

	Pallid Harrier (<i>C. macrourus</i>).	Montagu's (<i>C. pygargus</i>).	Hen-Harrier (<i>C. cyaneus</i>).
Upper-parts :	Pale grey.	Much darker.	Usually as pale.
Rump and upper tail-coverts :	Centre of rump grey, sides and upper tail- coverts white, broadly banded grey.	Grey : little white.	White
Sides of head and upper-breast :	White in adult. Very pale grey in 2nd summer.	Dark grey.	Grey.
Rest of under- parts :	White.	White striped brown-rufous.	White.
Wings :	Black restricted to few pri- maries and to distal halves of feathers.	Most of pri- maries black or dark grey. <i>Black bar</i> <i>across secon-</i> <i>daries.</i>	Much as in Pallid, but rather more black.
Tail—Outer feathers :	White, widely barred dark grey.	Greyer, not so white, and more rufous bars.	As Pallid, but bars narrower and often broken.

Females and juveniles resemble Montagu's Harrier very closely indeed, and there seems no constant difference in colour or markings, though some are rather paler; but usually they cannot be distinguished except by the position of the emargination of the second primary (see above and figure) and the longer tarsus of the Pallid. The Pallid also has a broader head and a more distinct facial ruff as in the Hen-Harrier.

First summer male.—After its first complete moult is like the adult male, but has darker grey upper-parts with a good deal of brown on head and nape and some brown feathers on wing-coverts, also feathers here and there on under-parts with fine central streaks of brown or rufous, and the outer tail-feathers with more rufous markings. Males like adults, but not quite so pale grey, and with occasional brown feathers, are probably in second summer.

Measurements and structure.—♂ wing 330–356 mm., tail 195–200, tarsus 63–70, bill from cere 15–17. ♀ wing 345–391. Primaries: 1st between 6th and 7th, 3rd longest, 2nd 17–30 mm. shorter, 4th



Primaries of M. Montagu's Harrier, P. Pallid Harrier, H. Hen-Harrier, to show differences in wing-formula and emarginations. In P and H primary-coverts are pushed aside to show emargination of 2nd primary, which they normally conceal, whereas in M this emargination is exposed. 5th primary in M and P is not emarginated and short, in H it is emarginated and longer.

—15 shorter, 5th 52–65 shorter, 6th 85–105 shorter; 2nd to 4th emarginated on outer, and 1st to 3rd on inner webs, emargination on outer web of 2nd hidden by primary-covert, or just visible. (For comparisons with Montagu's and Hen-Harriers see *Practical Handbook*, Vol. II., pp. 153 and 156.)

The Rev. F. C. R. Jourdain supplies the following:—

DISTRIBUTION.—*Abroad.*—Has bred in Sweden recently; Baltic Republics (sparingly), probably E. Poland, Russia, southern governments in steppe districts from Pétrograd, Novgorod and Ufa southward to Caucasia, Romania (Dobrogea); N. Persia, Transcaspia, Kirghiz steppes, Turkestan, S.W. Siberia, Semipalatinsk, Altai and Tarbagatai. Suspected of breeding in Cyprus, Italy and Germany, but no satisfactory proof. Winters chiefly in Africa, south to the Cape and in Asia to India, Ceylon and N. Burma, and occurs casually in Finland, Norway, Denmark, Holland, Belgium, France and Switzerland. Has also been recorded for the Yang-tse River in China.

BREEDING-HABITS.—Very little reliable information available, but in Romania certainly nests in swamps and not only on the drier steppes. *Nest.*—Dead stalks and vegetable matter. *Eggs.*—Usually 4 or 5, occasionally 6 in number. Sometimes unmarked, but more commonly spotted or blotched with faint reddish-brown and not infrequently quite heavily marked. Very few of the eggs in collections have been authenticated in any way, but have generally been taken by peasants and identified by appearance. Average size of 80 eggs (37 by Rey and the rest by Jourdain): 44.77×34.77 ; max. 50×37 ; min. 40.1×35 and 43.2×32.6 mm. *Breeding-season.*—Latter part of May; single brooded.

A NEW BRITISH FORM.

370. THE BRITISH OYSTER-CATCHER.—*Hæmatopus ostralegus occidentalis* Neumann.

HÆMATOPUS OSTRALEGUS OCCIDENTALIS Neumann, *Die gefiederte Welt*, 1929, Heft 14. (No type-specimen is named. A type-locality was designated by the B.O.U. Committee as Scotland (mainland), *Ibis* (Jan.), 1932, p. 100, but a type-specimen has subsequently been designated by Neumann, *Anz. Ornith. Ges. Bayern*, II., p. 148 (April, 1932), as ♂ Auskerri, Orkney, 3.10.1913, in Mus. Koenig, Bonn, and this must be accepted.)

Professor Neumann's description of the British Oyster-catcher as distinct, and a subsequent article on the subject by Mr. Finn Salomonsen (*Ibis*, 1930, pp. 56–66), were based on very inadequate material, and there were available insufficient specimens collected in the breeding-season, upon which to form an opinion as to the validity of the race. By the kindness of friends a series of breeding birds from various parts of Great Britain was collected, and these, together with those already available, when compared with breeding birds from Sweden (lent by Professor Lönnberg), were found to have thicker, and usually less finely pointed, bills. The figures given by Mr. Salomonsen in the *Ibis* (1930) are

evidently of extreme examples, the difference between the two forms being in most specimens much less marked, though observable both in the depth and breadth of the bill. In some cases, however, the difference is slight, while young birds may not be distinguishable.

The B.O.U. List Committee have therefore accepted Professor Neumann's name for the British form (*Ibis*, 1932, p. 100) and this must be altered as above.

The evidence for the inclusion on the British list of *Hæmatopus ostralegus ostralegus* L., typical locality Oeland, Baltic, was considered to be not conclusive. One or two winter specimens in the British Museum collection may be of this form, but owing to the intergrading of extremes they cannot definitely be assigned to the typical form. A young bird ringed at Sylt has been recovered near Cardiff, and although Mr. Salomonsen includes under the typical form Danish North Sea specimens, he states that these tend towards the British race, and we have not been able to examine a series from this region.

Hæmatopus ostralegus malacophaga Salomonsen, *Ibis*, 1930, p. 58, Iceland and Faeroes, is described as having a bill intermediate between *H. o. ostralegus* and *H. o. occidentalis* and a wing averaging longer than in the typical form, but the Committee was of opinion that the differences described were insufficient to make this form acceptable. Two birds ringed as nestlings in the Faeroes have been reported, one from Cheshire and one from co. Mayo, but comparing my measurements of British breeding adults with Mr. Salomonsen's of Faeroe birds and disregarding differences of only 1 mm., only 3 out of 11 Faeroe males have longer wings than British males, while none of the 13 Faeroe females are larger than British females, and only one British female is smaller than a Faeroe female.

My measurements of twenty British and eight Swedish adult breeding Oyster-Catchers are as follows:—

	Wing.	Bill Length.	Bill at distal end of nostrils. Depth.	Bill at distal end of nostrils. Breadth.	Bill : greatest depth between the tip and distal end of nostril groove.
<i>Males :</i>					
4 Swedish	241-255	65-71	9-11	7-8	9-10
12 British	252-263	67-78	11-12.5	8-10	10-11.5
<i>Females :</i>					
4 Swedish	241-258	71-78	9.5-11	7-9	8.5-10.5
9 British	257-270	73-79	11-12	8-11	10.5-12
	one 242	one 86			

My measurements of the depth and breadth of the bill are not comparable with Mr. Salomonsen's, since the point at which he has measured depends upon how much or little has been worn off the tip of the bill. It seems quite clear that the tip of the bill becomes more worn generally in British



BILLS OF OYSTER-CATCHERS (*Nat. size*).

A.—Oeland, Sweden, July 14th, 1924.

B.—Wales, June 25th, 1920.

C.—Shetlands, June 5th, 1930.

All females and breeding adults.

B and C show extremes in British adults.

than in Swedish birds and that it varies greatly individually in British birds. The reason for this is not clear, since adults from the same district have both pointed and worn tips to their bills. Young birds have sharply pointed bills, which sometimes begin to become blunt by September. Mr. Salomonsen (*Ibis*, 1930, p. 60) appears to have measured only

five birds from the British Islands and these may or may not have been native.

ALTERATIONS OF NAMES.

The following changes of name were agreed upon :—

21. THE MEALY REDPOLL.—*Carduelis flammea flammea* (L.).

FRINGILLA FLAMMEA Linnæus, Syst. Nat., 10th ed., p. 182, 1758, Europe. (Type locality restricted by B.O.U. List Com. to Norrland, Sweden, ex Fauna Svecica No. 201.)

22. THE GREENLAND REDPOLL.—*Carduelis flammea rostrata* (Coues).

23. THE LESSER REDPOLL.—*Carduelis flammea cabaret* (P. L. S. Müll.)

instead of *Carduelis linaria linaria*, *C. linaria rostrata*, and *C. linaria cabaret*.

Linnæus named the Mealy Redpoll twice on the same page, 182 of the tenth edition of the *Systema Naturæ*. The first name is *flammea*, and this was used by Hartert (*Vög. pal. Fauna*, Vol. I., p. 77) but subsequently rejected because Klein's description, to which Linnæus refers, was not clear. Professor Lönnberg has, however, recently shown (*Ibis*, 1931, p. 306, and pl. xi., fig. ii.) that Rudbeck's drawing, referred to by Linnæus in the *Fauna Svecica* (1746), No. 201, is clearly a Redpoll, and as "Faun. Svec. 201" is Linnæus's first reference under *flammea* on p. 182 of the *Systema Naturæ* this name must be used for the Mealy Redpoll.

230. THE SNOWY OWL.—*Nyctea scandiaca* (L.).

STRIX SCANDIACA Linnæus, Syst. Nat., 10th ed., p. 92 (1758—"Habitat in Alpibus Lapponiæ").

instead of *Nyctea nyctea* (L.).

This is another case founded on a Rudbeck drawing, and pointed out by Professor Lönnberg (*Ibis*, 1931, p. 306, pl. xii., fig. 1). In his tenth edition Linnæus divided the Owls into two groups, "Auriculatæ" (p. 92) and "Inauriculatæ," (p. 93). Under the first is included *scandiaca* and under the second *Nyctea*. The name *scandiaca*, which was used by Sharpe (*Cat. B.M.*, II), Newton (*Yarrell*, 4th ed.) and others, was rejected by Hartert (*Vög. p. F.*) and by us in the *Practical Handbook* because it was placed under the eared group (Hartert's reference to "an Owl with long ears" in the

footnote on p. 64, *Pract. Hand.*, Vol. II., is in error so far as the word "long" is concerned). Rudbeck's drawing is, however, a very good representation of a Snowy Owl, and as this picture is referred to under No. 46 in the *Fauna Svecica*, which forms the only reference to the name *scandiaca* in the *Systema Naturæ*, it is clear that we must revert to this name for the Snowy Owl. As I pointed out in my description on p. 65 of the *Handbook*, the bird has "more or less ill-defined horns," and these are slightly indicated in the Rudbeck drawing as reproduced in the *Ibis*.

BINOMIALS CONVERTED TO TRINOMIALS.

It was agreed that the following, previously under binomials, should have trinomials, subspecific forms being recognized.

12. THE CHOUGH.—*Pyrrhocorax pyrrhocorax pyrrhocorax* (L.)

the larger Asiatic race being distinguishable.

47. THE CURL BUNTING.—*Emberiza cirlus cirlus* L.
the Corsican race *E. c. nigrostriata* being distinct.

169. THE REDWING.—*Turdus musicus musicus* L.
the Iceland race having been accepted.

265. THE WHITE-TAILED EAGLE.—*Haliæetus albicilla albicilla* (L.)
the Greenland bird being distinct.

471. THE LITTLE AUK.—*Alle alle alle* (L.)
the Franz Josef's Land bird (*A. a. polaris* Stenhouse) having been shown to be considerably larger.

CHANGE OF AUTHOR.

183. The ISABELLINE WHEATEAR.—*Enanthe isabellina* (Temm.).

AXICOLA ISABELLINA Temminck, in Temm. & Laugier, *Planches Coloriées d'Oiseaux*, Vol. IV., Livr. 79, Pl. 472, fig. 1. (Aug. 1., *vide* G. M. Mathews), 1829. Nubia.

instead of *Æ. isabellina* (Cretzschmar).

This involves only a change of author and reference. In the *Practical Handbook* the date of Cretzschmar's name in Rüppell's *Atlas* is given as 1826. In the *Isis* for December, 1829 (cols. 1291-4), there is a review of the *Atlas*, giving parts and plates published. This includes up to Plate 31 of birds, and Part XV. Plate 34 with *S. isabellina* had not been published.

COMPLETE LIST OF ADDITIONS AND ALTERATIONS.

The following is a complete list of additions and alterations to the Systematic List published at the end of the *Practical Handbook* and in the *Check-List*. The numbers refer to these lists. Additions are given as "A" numbers, and to these the English name is added. Those marked with an asterisk have been given trinomials without alteration of name. References are added to pages and volumes in *British Birds* where the alterations are explained.

- *12. *Pyrrhocorax pyrrhocorax pyrrhocorax* (L.) *antea*, p. 15
 21. *Carduelis flammea flammea* (L.) *antea*, p. 14
 22. *Carduelis flammea rostrata* (Coues) *antea*, p. 14
 23. *Carduelis flammea cabaret* (P. L. S. Müll.) *antea*, p. 14
 45A. *Emberiza icterica* Eversmann Vol. XXV., pp. 66-69
 THE RED-HEADED BUNTING
 *47. *Emberiza cirrus cirrus* L. *antea*, p. 15
 *57. *Plectrophenax nivalis nivalis* (L.) Vol. XXII., p. 102
 72. *Anthus rufogularis* Brehm Vol. XXII., p. 102
 72A. *Anthus gustavi* Swinhoe Vol. XX., p. 11
 THE PETCHORA PIPIT
 145A. *Acrocephalus agricola agricola* (Jerdon) Vol. XX., p. 12
 THE PADDY-FIELD WARBLER
 *169. *Turdus musicus musicus* L. *antea*, p. 15
 169A. *Turdus musicus coburni* Sharpe Vol. XX., p. 14
 THE ICELAND REDWING
 177A. *Œnanthe deserti deserti* (Temm.) Vol. XXIV., p. 22
 THE DESERT-WHEATEAR
 183. *Œnanthe isabellina* (Temm.) *antea*, p. 15
 203A. *Troglodytes troglodytes hebridensis* Meinertz. Vol. XXII., p. 98
 THE OUTER HEBRIDEAN WREN
 216A. *Chordeiles minor minor* (Forster) Vol. XXII., p. 98,
 THE AMERICAN NIGHTJAR Vol. XXIV., p. 24
 230. *Nyctea scandiaca* (L.) *antea*, p. 14
 258A. *Circus macrourus* (Gm.) *antea*, p. 8
 THE PALLID HARRIER
 *265. *Haliæetus albicilla albicilla* (L.) *antea*, p. 15
 297A. *Branta bernicla hrota* (Müll.) Vol. XXII., p. 102
 THE PALE-BREASTED BRENT GOOSE
 329A. *Phalacrocorax carbo sinensis* (Shaw & Nodder)
 THE SOUTHERN CORMORANT Vol. XXIV., p. 23
 353A. *Podiceps griseigena holbællii* Reinhardt Vol. XXII., p. 100
 THE AMERICAN RED-NECKED GREBE
 370. *Hæmatopus ostralegus occidentalis* Neumann *antea*, p. 11
 430A. *Capella gallinago delicata* (Ord) Vol. XVII., pp. 283-8
 THE AMERICAN SNIPE
 455. *Larus fuscus graellsii* Brehm Vol. XXIV., p. 24
 458. *Larus leucopterus* Vieill. Vol. XXII., p. 102
 *471. *Alle alle alle* (L.) *antea*, p. 15
 476. *Grus grus grus* (L.) Vol. XXIV., p. 25

THE TRING COLLECTION OF BIRDS.

BY

H. F. WITHERBY.

ALL ornithologists will condole with Lord Rothschild in the necessity which has forced him to dispose of one section of his wonderful collection at Tring in order to enable him to advance the other part. That the Lepidoptera have been kept at the expense of the birds and that the birds have gone to America is a sudden and bitter blow to British ornithologists. Indeed, the collection was of such great importance to systematic ornithology that its removal to New York is a very severe loss not only to us but to a wide circle of ornithologists all over Europe.

The skins have now been shipped and we can only deplore that no means could have been found to preserve for Britain a collection of such great value for the purposes of study now and in the future. We understand that it has been purchased by a benefactor or benefactress to science, whose name has not yet been divulged, and presented to the American Museum of Natural History in New York. Would that our millionaires (if there still be any!) would cultivate the vogue of benefiting natural science. It is sad indeed that our studies and progress in systematic ornithology are to be so severely handicapped for want of discovering such a benefactor in this country.

Dr. R. C. Murphy of the American Museum of Natural History has been at Tring for several months superintending the packing of the collection and dealing with innumerable enquiries. His task has been both arduous and delicate and has been performed in a truly admirable way. Dr. Murphy has made a catalogue of the collection and informs me that the bird-skins acquired number in all just 280,000. Some 400 genera as used by Hartert are represented, but these are comprehensive genera, and the number would be largely increased under many systematists. Lord Rothschild has preserved some 6,000 birds, including 4,000 mounted ones, the Struthionidæ, a Great Auk (there were two), some duplicate specimens of rare extinct Hawaiian birds and others not otherwise adequately represented in this country.

The collection, Dr. Murphy says, fits in with, and fills blanks in the bird collection in the New York Museum in a remarkable way. With the exception of Central Asia south of the Himalayas, which is still a weak spot, that collection will now be very representative of the birds of the world and will contain

in all over seven hundred thousand skins. In addition to the magnificent facilities for systematic study thus afforded, there are shortly to be added to the Museum aviaries and laboratory arrangements for experimental work of different kinds. The specially arranged geographic groups, showing types of country and types of the birds inhabiting them are being added to on a world-wide basis. On behalf of the authorities of the Museum, Dr. Murphy has given a cordial invitation to British ornithologists to avail themselves of these unexampled facilities for study.

New York thus becomes a Mecca for the ornithologist, but in these times hard to reach. Meanwhile, let us remember that our own National collection can still hold up its head, though it cannot now be said to occupy the proud position, so long held, of being the largest and most important in the world. How many skins it contains is unknown, but the total certainly falls far short of that of the American Museum now that the Tring collection has been added to that institution. It has too, inadequate facilities for study, especially in space and light, and British ornithologists must neglect no steps to obtain increased conveniences and to assist in building up the collection by filling in the gaps caused by the loss of the Tring collection.

European and north-west African birds, with which Tring was so well equipped, are very inadequately represented in the British Museum, and even many common British birds are badly wanted, since so many specimens have no proper data, while breeding and moulting birds are often few and far between. There are many other parts of the world from which properly collected skins with full data are much required, such as Egypt, parts of China, and the islands of the Far East, and those ornithologists who go abroad, or live overseas, should not neglect to enquire of the Museum authorities how they can best assist to fill up gaps.

To review briefly what we have lost, one may be forgiven in reminding readers that Dr. E. Hartert, who spent with Lord Rothschild the best part of a lifetime building up the Tring collection, founded his incomparable work *Die Vögel der palaarktischen Fauna* upon it. It contained the wonderful Brehm collection with its innumerable types, while it had by far the best series of north African birds, mostly collected personally by Lord Rothschild and Dr. Hartert. The series of British-taken birds was extremely useful, though some rare breeding birds were not represented—there was no specimen for instance of a British Kite.

Outside the Palæarctic region the wonderful collections in New Guinea and the Eastern Islands, the splendid Australian collection brought together by Mr. Gregory M. Mathews for his great work on *The Birds of Australia*, the skins from the Galapagos and Hawaiian Islands, the unique Maran Air collection, important collections from the Near East and from East Africa made by Col. R. Meinertzhagen and by Dr. V. G. L. Van Someren, represent but a fraction of the treasures from all over the world which British ornithologists had come to regard as secure for permanent and easy reference as any national collection. But alas! these are days when the surest foundations are being uprooted and ornithology does not go scatheless.

The history of the collection is bound up with Dr. Hartert and his great influence on systematic ornithology. We must indeed be thankful to have had in our midst such a master for many years and that the means were found for him to exercise his talents to the full. When Dr. Hartert went to Tring in October, 1892, there was a small collection of skins, but even this beginning Lord Rothschild had made on a world-wide basis, there being birds from the Sandwich Islands, New Zealand and Mexico. The buildings were then small, and later the skins were housed in an iron "hall". About the year 1900 the present magnificent bird room, with its excellent arrangement of cabinets everywhere handy to long tables and large windows, was built.

To this splendid bird room there came ornithologists from all over the world to work under ideal conditions, and many of the happy days the present writer has spent there under the patient guidance of Dr. Hartert, who above all others taught us the value of embracing subspecies and trinomials in systematic work.

Lord Rothschild was always ready to lend material for determination and comparison, and this loss of facilities will be sorely felt as it is always difficult to lend collections from public institutions. As an example of the generous way in which the collection was available for special work, I may mention that during the ten years or so I was describing moults and plumages of British birds for the *Practical Fieldbook* all the skins at Tring (excepting those of the large birds) were regularly sent to me species by species. I was thus able to devote week-ends to this task, which would otherwise have been impossible of accomplishment. The late Col. R. Meinertzhagen also spent many weeks at Tring working on the Ducks and Waders.

Lord Rothschild informs me that he has arranged that the collection will be kept as a complete unit and that any serious student will be able to get specimens sent over from New York for comparison. In connexion with this important point Dr. Murphy assures me that such requests from scientific workers will be met in a very liberal way. This will be a great advantage in clearing up points of special importance, though to consult the collection in a general way will in future mean crossing the Atlantic.

Although there was no catalogue or list of the collection, Dr. Hartert had listed the types in a series of critical papers in the Tring Museum publication *Novitates Zoologicae*.

The first of these papers appeared in 1918 (Vol. XXV., pp. 4-63) and was devoted to the types in the Brehm collection. These number 371, and although many of them are not recognized as distinct, they may become important in future discussions. The following are valid types of birds on the British List: *Nucifraga caryocatactes macrorhynchus*, *Carduelis flammea holboellii*, *Loxia leucoptera bifasciata*, *Athene noctua vidalii*, *Podiceps nigricollis nigricollis*, *Charadrius apricarius altifrons*, *Calidris alpina schinzii*, *Capella gallinago faeroeensis*, *Larus fuscus graellsii*, *Fratercula arctica grabæ*.

There followed a long series of papers on the types in the general collection. These totalled 2,005 in all and were discussed in the following volumes:—XXVI. (1919), pp. 123-178, XXVII. (1920), pp. 425-505, XXIX. (1922), pp. 365-412, XXXI. (1924), pp. 112-134, XXXII. (1925), pp. 138-157, 259-276, XXXIII. (1926), pp. 344-357, XXXIV. (1927), pp. 1-38, 189-230.

Finally, 160 of the types of Mr. Mathews's Australian birds have been listed and discussed (Vols. XXXV. (1929), pp. 42-58, XXXVI. (1931), pp. 184-190, XXXVII. (1931), pp. 35-52), but it seems doubtful if Dr. Hartert will be able now to complete this task.

Among the types in the general collection there are fifteen of our native birds, and it would be indeed a gracious act if the American Museum of Natural History would present these to our own Natural History Museum. It seems hardly right that we should lose the types of these subspecies, almost all peculiar to our islands, and, therefore, of the greatest interest to us, and should the American Museum see its way to adopt this suggestion British ornithologists, both present and future, would have good reason to be grateful.

The following is a list of these types with the localities and dates of the specimens:—

- (*Garrulus glandarius rufitergum* Hartert. Tring, 21.10.1895.
- (*Garrulus glandarius hibernicus* Witherby & Hartert. Co. Wexford, 1895., 1910.
- (*Carduelis carduelis britannica* (Hartert). Rottingdean, Sussex, April, 1902.
- (*Loxia curvirostra anglica* Hartert. Tring, 2.12.1897.
- (*Sitta europæa britannica* Hartert. Tring, 13.10.1898.
- (*Regulus regulus anglorum* Hartert. Tring, 31.10.1900.
- (*Parus atricapillus kleinschmidti* Hellmayr. Finchley, Middlesex, 29.1897.
- (*Saxicola torquata hibernans* (Hartert). Tring, 14.11.1898.
- (*Erithacus rubecula melophilus* Hartert. Barnet, Middlesex, 14.12.1896.
- (*Turdus philomelos clarkei* Hartert. Tring, 16.5.1902.
- (*Prunella modularis occidentalis* (Hartert). Tring, 10.4.1893.
- (*Cinclus cinclus hibernicus* Hartert. Co. Cork, 25.8.1896.
- (*Dryobates major anglicus* (Hartert). Horsham, Sussex, 2.1.1895.
- (*Dryobates minor comminutus* (Hartert). Wingrave, Bucks., 22.4.1902.
- (*Picus viridis pluvius* Hartert. Ninfield, Sussex, 28.4.1903.

The retirement of Dr. Hartert from Tring in May, 1930, and now the loss of the collection are severe blows, an epoch may be said to be closed, and Hartert and Tring will be found deeply engraven on the tablets of the history of British, and indeed European, ornithology.

NOTES

CROSSBILL BREEDING IN BRECONSHIRE.

FOLLOWING the many reports of Crossbills (*Loxia c. curvirostra*) during the winter of 1929-30 and again in the autumn of 1930 in various parts of the country, I determined to keep a special look out for them in Breconshire. It was not, however, until January 28th, 1931, that I first saw any and on that date about ten birds appeared at Garth, near Builth. Here we have a fair number of Scots firs round the house as well as several good-sized plantations of larch and spruce about ten years old.

After this date I saw Crossbills every few days. On March 26th they seemed to be in pairs, and on April 11th I watched a pair building at the end of a fir bough close to my house.

I saw the bird lay its first foundation of dry grass. In the evening the nest was well advanced and the bird was still building at 4.30 p.m. The hen did all the work, the cock accompanying her to and from the nest.

On the next day she was busy building the exterior of the nest with twigs torn off an adjoining fir. The twigs were carefully interwoven and a large piece of sheep's wool hanging in the tree also went into the foundation of the nest. Besides the pair with the nest there were four cocks and two hens on an alder tree close by.

On the 14th the Crossbill was lining her nest. It was lined with fine grasses and a few feathers. On the 16th it seemed perfectly ready for eggs, but the first egg was not laid until the 18th, exactly a week after the nest was begun. Eventually three eggs were laid.

I believe that this is the first occasion the bird has been recorded as breeding in Breconshire. A. T. WILSON.

FIRE-CRESTED WREN IN WESTMORLAND.

ON April 17th, 1932, I saw a Fire-crested Wren (*Regulus ignicapillus*) at Glenridding, Ullswater, Westmorland. The bird was indifferent to my presence, and I was able to identify it at close quarters.

On April 24th a local ornithologist reported a Firecrest about a quarter of a mile from where I saw mine, though whether the same bird it is impossible to say. The last Firecrest I saw in the neighbourhood was in December, 1929,

but have never before heard of one at this time of the year.

H. J. MOON.

MISTLE-THRUSH BUILDING SECOND NEST ON SAME SPOT AS FIRST.

On April 7th, 1932, at Trefnant, Denbighshire, I found a typical wool-adorned nest of a Mistle-Thrush (*Turdus v. viscivorus*), some 10 feet from the ground and near the end of a Scots fir branch. It contained four considerably incubated eggs, which were collected, and the nest was removed, examined and thrown away. On April 18th I noticed again another nest in exactly the same spot as the one already destroyed. Since it was not wool-decorated, I presumed it to be a Blackbird's and did not trouble to look into it. On May 3rd a Mistle-Thrush was seen sitting in this nest and, on examination, it was found to contain four eggs which looked to be nearly hatching. Innumerable nesting-sites were available in neighbouring fir trees, and it is therefore remarkable that this pair of birds should have re-built at once, in the exact spot where they had already lost a nest and eggs.

On April 12th in the same garden I inspected a Mistle-Thrush's nest containing newly-hatched young. On May 3rd I found that this nest contained three fresh eggs. The outside of the nest looked faded and old, but the inside was quite clean and fresh.

W. M. CONGREVE.

SONG-THRUSH BREEDING ON BARE GROUND.

On April 4th, 1932, I found four eggs of a Song-Thrush (*Turdus ph. clarkei*) laid on the bare earth with no traces of a nest of any description, except for a slight depression that had evidently been scraped by the bird.

There was no herbage to hide the sitting bird, which could be seen very plainly from quite a distance. The spot was quite sheltered in a nursery between thick hedges on a plot of carefully cleared ground at Langley, near Slough.

G. H. STOCK.

PURPLE HERON IN PEMBROKESHIRE.

On April 20th, 1932, a Heron in a very weak condition was seen by my children standing by a stream about a mile from Laverfordwest. On the 23rd the bird was found dead very near the same spot and was brought in to me. It proved to be a mature female Purple Heron (*Ardea purpurea*), and I sent it to the National Museum of Wales, Cardiff.

GUY S. HAINES.

[We are informed that the plumage of the bird was in good condition, but that it was extremely emaciated and that it

had lost its right eye, which had been badly lacerated. Mr. A. Thomas, of the National Museum, informs us that the stomach contained a common shrew's skull.

While being examined at the Museum a parasitic bird-fly was found in its plumage, and as this was obviously different from the British *Ornithomyia avicularia* L., it was sent by the Department of Zoology to Mr. J. E. Collin, a well-known authority on the *Diptera*. Mr. Collin identifies it as *Olfersia ardeæ* Macquart. This fly has not previously been recorded in Britain, but Mr. Collin states that it has been taken off various species of Herons from Africa, Sicily, Italy and Moravia.

Except for one recorded as having been killed many years ago in Breconshire, we know of no other reported occurrence of the Purple Heron in Wales.—EDS.]

BIRDS AT NORTH WORCESTERSHIRE RESERVOIRS, 1930 AND 1931.

MR. BETTS has recorded Black Terns that occurred in August, 1931, at the Bittell reservoirs, and a Great Northern Diver seen in January, 1932.

No other records, I think, have been published since the end of 1929. The following notes cover the two years, 1930 and 1931. They are based on the observations of several observers.

Goosanders (*M. merganser*) have been present each winter. In the early months of 1930 one, at least, seemed to be constantly present; on January 15th there were two drakes; on February 12th and 22nd three, only one being a drake, and on March 19th, 22nd and 24th again three. None were seen later. In 1931 a pair were present during January, February and March, and three (two drakes) were seen on January 10th and February 28th. At 12.15 on the latter date all three left the water and flew away to the north. The pair were still present on March 21st and one on April 1st.

Other unusual ducks appeared during 1931: a Sheld-Duck (*T. tadorna*) was seen on March 21st, a drake Pintail (*A. acuta*) (possibly also a duck) on March 26th, and a pair of Garganey (*A. querquedula*) stayed from April 20th to 22nd; one was also seen in June, and a pair on September 21st; a Common Scoter (*O. nigra*) was seen on April 20th, and another—a very pale and very small bird, hardly larger than a Tufted Duck—remained from late November till at least December 17th.

Shoveler (*S. clypeata*) and Goldeneye (*B. clangula*) are much less regular at these reservoirs than they are 25 miles away in

Staffordshire. A pair or two of the former usually appear in April. Their winter visits are very occasional, and in autumn they are irregular. In the autumn of 1931 they were more in evidence than usual, and on October 8th there were six. Goldeneye usually occur singly, most frequently in November, or in March and April. During 1931 both a drake and a duck Pochard (*N. ferina*) were seen during the breeding-season, but they were not observed together, and there was no evidence of nesting.

The only one of the three rarer Grebes seen during these two years was an Eared Grebe (*P. nigricollis*) in full plumage on April 6th, 1930.

Waders have been scarce, owing to lack of open mud. Lapwings and Snipe are regular of course, and Redshanks and Common Sandpipers appear in small numbers on migration each year. On July 21st, 1930, with driving rain from the west, a party of six Sanderlings (*C. alba*) was observed flying round the reservoir about noon; five of the six flew away in a north-easterly direction. Three days later a Curlew (*N. arquata*) was seen flying south; others have been noted in spring. In 1931 single Dunlins (*C. alpina*) were observed in April and May.

During the summer of 1931, Terns, apparently all Arctic (*S. macrura*), were seen at surprising times. One was present on May 6th, one on May 30th and two on June 17th. These two, undoubtedly Arctic, judging both from the cries they made and the wing-pattern, were watched both at rest on buoys and playing together high in the air, as if courting.

Apart from occasional Black-headed Gulls during the winter and Lesser Black-backs passing in springtime, the only other Gull observed in either year was a Common Gull (*L. canus*) in immature plumage, seen on May 5th, 1930.

H. G. ALEXANDER.

BARNACLE-GEESSE IN N.W. SUTHERLAND.

MR. ROSS, of Scourie, Sutherland, has told me of a remarkable visitation of Barnacle-Geese (*Branta leucopsis*) to the Scourie District during last winter.

He says that he has known them come to the Badcall Islands during winter and spring for about twelve years. They arrived in hundreds in January, 1932, and spread over the islands of Badcall and Handa and parts of the mainland. The greater number left about mid-February, but some remained on until the end of March.

He says he has never seen them on the mainland in flocks before, or in such large numbers in the district.

In *The Geographical Distribution and Status of Birds in Scotland*, Miss Baxter and Miss Rintoul mark the Barnacle-Goose as "occasional" in west Sutherland. There seems to be no record of the bird in north Sutherland. Harvie-Brown says "rare" in N.W. Highlands. R. J. BUXTON.

WHIMBREL IN WARWICKSHIRE.

DURING the thirteen years I have lived in this part of the country, I have never observed a Whimbrel (*Numenius phaeopus*) at the North Worcestershire reservoirs. At 10 p.m. (summer time) on 13th August, 1931, however, I heard one flying over my house, for the first time. This is in Birmingham, and therefore now reckons for Warwick, though this part of Birmingham was formerly in Worcestershire.

H. G. ALEXANDER.

SCANDINAVIAN LESSER BLACK-BACKED GULL IN DEVONSHIRE.

ON May 12th, 1932, while bird-watching on Dawlish Warren, Mr. J. H. Comyns and I observed a Lesser Black-backed Gull in company with a number of Herring-Gulls, both adult and immature. This bird was, I think, in its third summer, the wings being mottled with grey and brown, the beak mostly yellow with scarcely any red in the angle, and the legs pale yellow. But what struck us particularly was the colour of the back, which was not slaty-grey but black, quite as black as that of the Great Black-backed Gull. This was very noticeable and is, surely, a proof that the bird was not the British form but the Scandinavian Lesser Black-backed Gull (*Larus f. fuscus*). So far as I know, this sub-species has not hitherto been recorded in Devon, and its movements in this country still appear to be somewhat obscure.

W. WALMESLEY WHITE.

MOVEMENTS OF RINGED BIRDS FROM ABROAD.—*Correction.*—On page 358, Vol. XXV., a Redwing (*Turdus musicus*) ringed in Holland (Leiden 15009) was reported. Mr. Fr. Haverschmidt points out that this was not a Redwing but a Song-Thrush (*Turdus philomelus clarkei*), and that it was ringed as a nestling. We much regret this error, which was due to the fact that Professor van Oort is still using the old name of *musicus* for the Song-Thrush.

TAWNY OWL TAKING GREEN WOODPECKER.—Mr. H. H. Davis writes that with reference to his note of finding remains

of a Green Woodpecker in a nesting-hole of a Tawny Owl in May, 1930 (*antea*, Vol. XXIV., p. 30), he visited the same nesting-place this year (1932) and again found remains of a Green Woodpecker, evidently recently killed. There were three young Tawny Owls in the nest.

BREEDING STATUS OF BLACK-THROATED AND RED-THROATED DIVERS IN SOUTH ARGYLLSHIRE.—The Rev. J. M. McWilliam (*Scot. Nat.*, 1931, pp. 161-164) has some interesting notes on the breeding of *Colymbus arcticus* and *C. stellatus*, which he sums up by stating that the status of the two may now stand as "breeding regularly in south Argyllshire." Mr. McWilliam has examined eggs of both Divers from a group of lochs "on the mainland of Argyllshire, south of the 56th parallel of latitude", and has been informed that they breed regularly and have done so for many years in this region. From information obtained, and from his own observations on the spot, Mr. McWilliam concludes that at least three pairs of Black-throated and two pairs of Red-throated Divers nest there regularly. This puts the breeding range of both these Divers further south on the Scottish mainland than was hitherto known. Of the Red-throated, Mr. McWilliam remarks that his information about its status in south-west Scotland makes the isolated breeding-place in co. Donegal "distinctly less extraordinary than it has hitherto appeared".

RARE BIRDS AT FAIR ISLE.—Mr. George Stout (*Scot. Nat.*, 1932, p. 38) states that on August 6th, 1931, during a large migration of Swallows, Martins and Swifts at Fair Isle, he observed a Needle-tailed Swift (*Chætura caudacuta*). He was first struck by the large size of the bird, and later saw it closer (within 20 yards) and "had a clear view of all the characteristics of the bird." It would have made the observation more interesting had Mr. Stout, who is a first-class observer, given these characteristics in detail as seen by him.

Other rare birds recorded are: a Petchora Pipit (*Anthus mustavi*) late in August and another towards the end of September (unfortunately no exact dates are given); a Rock-Thrush (*Monticola saxatilis*) on November 8th, 1931; two Richard's Pipits (*A. richardi*) and two Scarlet Grosbeaks (*Carpodacus erythrinus*) on November 9th. A Red-throated Pipit (*A. rufogularis*), an Eversmann's Warbler (*Phylloscopus borealis*), a "few" Barred Warblers (*Sylvia nisoria*) and a Golden Oriole (*Oriolus oriolus*) are also mentioned as having occurred, but no dates or particulars are given and it is a

great pity that these interesting records are published in such an incomplete form.

BIRDS AT ISLE OF MAY AND BASS ROCK.—Miss L. J. Rintoul and Miss E. V. Baxter observed the following unusual visitors on the Isle of May (*Scot. Nat.*, 1931, pp. 165-168). Nightingale (*Luscinia megarhyncha*), August 26th to 29th, 1931, the first autumn record from Scotland; Wood-Lark (*Lullula arborea*), August 27th; Lesser Whitethroat (*Sylvia curruca*), August 28th-30th and September 2nd; Reed-Warbler (*Acrocephalus streperus*), September 3rd, being the first record for the Forth area.

Mr. J. Bain (*t.c.*, 1932, p. 58) saw, among other migrants at the Bass Rock on September 2nd, 1931, a Lesser White-throat and a Barred Warbler (*Sylvia nisoria*).

LETTER.

"DRUMMING" OF GREAT SPOTTED WOODPECKER.

To the Editors of BRITISH BIRDS.

SIRS,—I find it impossible to accept Mr. M. A. Swann's note in the May number (Vol. XXV., p. 364) as a reliable observation.

The drumming of Woodpeckers has always interested me, and I have followed up, located, and watched the performers not once or twice, but perhaps hundreds of times.

That the sound is produced by a very rapid succession of blows of the bill on a branch selected for being in that springy and resonant stage of deadness which precedes actual rottenness is absolutely certain, and this has been confirmed by such a multitude of observers that I should have thought the fact was now established beyond controversy.

Besides our Great and Lesser Spotted Woodpeckers, both of which are common here, and may be watched drumming any day in spring or early summer (a Lesser Spotted Woodpecker has a drumming station on a dying oak within twenty yards of my bedroom window), very many other Woodpeckers, palæarctic and tropical, have the same habit, and I have watched more species drumming than I can remember. Among these I recollect two in particular—*Thriponax hodgei* (Blyth), the great scarlet-headed, black Woodpecker of the Andaman Islands, which drums on the tall, dead "Gurjon" trees scattered through the jungles, and produces an extraordinarily powerful jarring rattle, audible a mile away, and, the last tropical species I have had the opportunity of watching, *Celeus elegans* (Mull.), on dead trees in the forests of Trinidad—another powerful drummer. I know of no case in which birds which produce a certain sound mechanically can produce the same sound vocally also. Personally, I feel sure that Mr. Swann, and others who claim to have observed Woodpeckers of any species drumming without striking upon wood, *have simply had their glasses on the wrong bird, and not the performer*, which was probably clinging motionless and unobserved to another branch between drummings. The mistake might easily be made, as the sudden vibrating rattle is often not easy to locate exactly.

A. L. BUTLER.

ST. LEONARD'S PARK, HORSHAM, May 5th, 1932.

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SOME BREEDING HABITS OF THE ROOK.

BY

G. K. YEATES.

THE following notes on the Rook (*Corvus f. frugilegus*) were taken at Stodmarsh, Kent, from an observation post in a rookery during March and April, 1932. Observations were taken on ten occasions between March 14th and April 17th, and on six occasions from the hide itself, sessions lasting on an average from two to two and a half hours.

The rookery was a large one, there being some 350 nests, built in the following trees : Scots pine (about 60 per cent.), oak (about 25 per cent.), beech and elm (about 15 per cent.).

The hide was so situated that four nests could be watched well, while eight others could be seen adequately. The following remarks will be taken chiefly from notes made on behaviour at the four nests above referred to. Two were to the east of the hide, which I shall hereafter refer to as nests A and B, and two to the west, hereafter called C and D.

At nest C I could be certain which was the female as I had seen the birds mating, and the female had a white chin, which her much larger partner lacked. At the other nests I had no such mark to help, but there was an appreciable difference in the size of the birds, the larger bird being from my observations the male.

During observation-sessions in the hide three periods in the breeding life of the Rook were covered : (1) the later courtship habits ; (2) the period during incubation ; (3) the period after the eggs had hatched until the young were half-grown—in one nest, C.

(1) *The Later Courtship Habits.*

As will be seen from the date of starting work, courtship was already well advanced, with the result that only its later stages could be watched. Mating apparently takes place well into the incubation-period, for on March 27th it occurred three times during 2½ hours at nest A ; once attempted (unsuccessfully) on nest B ; on March 31st once on nest C, where to my certain knowledge the eggs had been laid at least twelve days, and I suspect longer. At this stage mating takes place by two methods of approach. In the first there is definite courtship. The male (at nest B) alighted above the nest on which the female was sitting, flying down to alight behind his mate, where he cawed twice. Finding that did not draw her attention, he hopped round level with her, where he bent his legs and stretched forward his neck, cawing

deeply twice, his beak level with her's and his tail fanned out to each caw. Finding that still futile he hopped savagely on to her back, from which he was viciously repulsed. The other method, the more usual one, at any rate at this season, is for the male to alight directly on to the back of the female, mating being accomplished amid much wing-beating. This method was always accompanied by an offering of food. I obtained no definite evidence of promiscuous mating, but on one occasion I saw the incubating bird, which to judge by the other nests would be the female, displaying to two other birds, which were perched close to the nest—the display was a mere fanning of the tail, which was turned in turn toward both of the birds present. On another occasion (at nest C) the female savagely attacked an intruder, which sat solicitously on a bough near her head. The habit of Rooks to “mob” a mating pair has already been observed (E. Selous: *Realities of Bird Life*, Ch. IX.). On one of the three occasions when mating took place at nest A on March 27th two other Rooks appeared, but there was no proper mobbing, they merely cawed loudly to one another.

(2) *The Period during Incubation.*

So far as I can see the task of incubation falls entirely on the female. At any rate on the many occasions on which the male was present at the nest while the female flew off to stretch her wings, he never attempted to cover the eggs. The male feeds the female at fairly regular intervals, which seem to vary from nest to nest. At nests C and D, for instance, it was at least once every hour, but rather less at nest A and apparently very rarely at B. At another nest, however, it occurred as often as every half hour or thereabouts. To be fed thus by her mate is the cause of great excitement to the female. She frequently leaves the nest with anxious cawing to receive the food, and begs for it with a wildly excited wing flapping. She receives it amid contented “gobbling” sounds. Occasionally the male feeds her while she is sitting on the nest, but she usually leaves it and meets him half-way, though the actual feeding operation always took place on the nest itself. He either gives her food, or the female takes it out of his open gape. The latter method, which is the more usual, is shown fairly clearly in the photograph. Regurgitation costs no visible effort at all. The male alights and the feeding at once commences without any apparent “gulpings”.

The male is altogether a very attentive husband at this time, being constantly on the spot to watch over his mate.

Not only does he feed her regularly, but he also gives her opportunities of easing her wings, which she does either by flying, or merely walking out on the boughs around and



Male Rook feeding female. Note the ecstatic position and quivering wings of the female.
(Photographed by G. K. Yeates.)

stretching her stiff wings and legs. On one occasion when the female was panting in the sun, the male came down and shielded her from the direct rays. Once settled she rarely turns the eggs, but she arranges them with great care before covering them and takes a very considerable time in getting them comfortable beneath her.

(3) *The Period after the Eggs are Hatched.*

When the young hatch the female eats the egg-shells. This I saw at nest C, and my friend, H. N. Southern, saw it occur again at nest A later in the week. The number of broken egg-shells beneath the trees during April seems to show that this is not always the case, though the wind may well take away a few. The hatching of the young at nest C was the

signal for the immediate departure of the female, and she returned in a very short space of time with the male, both cawing loudly. The female continues to brood constantly for over a week after hatching has taken place, and the visits of the male are now increased. At nest C feeding took place every 25 minutes almost regularly. The pouch is now fully distended with food, which was not the case when he had only the female to feed. His arrival is still greeted with excitement by the female and she now always flies off to meet him. Her solicitations for food are now redoubled and the male seems reluctant to give her any. He wears the expression of "I've got the food; now *I'm* going to distribute it". Usually he flies to the nest before giving any to her (which he always did eventually). It is received now with the greatest ecstasy of flapping. The photograph shows such a scene. I thought at first that the female's request for food was in order to be able to assist in feeding the young herself, but it was clear that she wanted it for her own consumption and I never saw her feed the young. The male did all the feeding of the young, at all events until they were over 13 days old. He also seemed responsible for clearing excreta, etc., from the nest. The female certainly never removed anything during my sessions in the hide. At the nest (save when the male is cleaning it out) the two birds appear to have their specified sides for alighting, and indeed it was difficult not to be struck by the cut-and-dried method of approach used by the females of all the nests watched. The same twigs, and almost the same part of those twigs, were used for each approach.

(4) *Some Miscellaneous Points.*

As with heronries, there appears to be a second occupation of a rookery. The first is that in which the eggs are laid about the second week in March, and the second is during the first week in April. On April 4th two nests were being built in my tree, one of which had eggs by April 11th. When I took down my hide on April 17th a nest was being constructed actually in the hide itself. So far as I could see there had been no casualties to nests in the rest of the rookery, so these were doubtless later breeders.

The colony contained three vast clumps of nests. These on my first census were assessed at 5 or 6 nests, but on climbing to them later I discovered that two was the maximum number, the rest of the pile being but masses of the dead and rotten twigs of old nests. It is a point that may well be borne in mind by others taking a census of a rookery that these masses are more likely to be correctly estimated at two or three nests rather than five or six.

THE FOOD OF THE SPARROW-HAWK.

BY

J. H. OWEN.

THE *menu* of the Sparrow-Hawk (*Accipiter n. nisus*) covers a very wide range, although probably 98 per cent. of it consists of the flesh of birds. The other 2 per cent. consists of insects, mammals and carrion : by carrion I mean birds or mammals that the Sparrow-Hawk has found dead and not killed. Insects form a very small portion of the food supply, merely an occasional beetle ; it is very rarely that insect remains are found in the pellets.

Mammals are eaten more frequently : rabbits, mice of various kinds, small rats, bats and more rarely a mole ; whether Sparrow-Hawks kill moles or find them dead I cannot say. It is not uncommon to see moles above ground in very dry weather, or even at other times, so that a hawk might easily take one. On the other hand a dead mole is a common enough sight ; this is especially the case when the skins are practically valueless, for then mole-trappers often throw the bodies away when they take them out of the traps. Bats are caught at twilight and are eaten very completely as far as I can see. On April 25th, 1932, at 8.30 p.m. (S.T.), three of us saw a male Sparrow-Hawk catch a pipistrelle within a few yards of us. The bat was hawking by the side of an orchard and the hawk came over it. The rush of the hawk took the bat by surprise and it dipped and so let the hawk get above it. Every turn and twist of the bat was followed with amazing speed by the hawk, which drove the bat down and down and at last took it about six inches from the ground. It flew with its prey into the orchard and ate it within 30 yards of us. Remains of the above-mentioned mammals may be occasionally seen at the feeding-places or found by breaking up the pellets.

Although Owls sometimes eat small frogs I have never known a Sparrow-Hawk do so. Neither have I any record of one eating earthworms, although they form quite a large percentage of the food of the Little Owl and figure in the *menu* of the Red-backed Shrike. Carrion figures more frequently in the bill of fare. I was very much surprised on one occasion to come on a Sparrow-Hawk feeding on the carcase of a full-grown rabbit that had been dead a considerable time. I came to the conclusion that Magpies had taken out the eyes and made a hole in the body and that the hawk had enlarged the hole. Later in the day I passed it again and

this time a Kestrel was feeding on the remains. Another time I surprised a female Sparrow-Hawk feeding on the remains of another hen that I had shot myself a day or two previously. Later in the day a Magpie was feeding on it; probably therefore in this case it was the Magpie's work which attracted the Sparrow-Hawk to the body. Keepers who use poison, and I am thankful to say that only a very few of those I meet do so, often make use of this habit of the Sparrow-Hawk of feeding on carrion to destroy it. As a rule the partly-plucked body of a Blackbird is placed amongst the loose feathers at some open spot frequented by the hawk or by a feeding-place. I had two skins, in my collection, of birds that keepers had destroyed in this way.



SPARROW-HAWK : A hen carrying away remains of a Stock-Dove to drop it.

(Photographed by J. H. Owen.)

Each winter for many years I have spent part of my holidays near Pembroke. Before the war the Sparrow-Hawk was quite a rare bird there. Now that many of the estates have been broken up it seems fairly common. There one may occasionally see a Sparrow-Hawk feeding on the remains of

a duck or wader that the shore shooter has neglected to gather. The duck may be one of many different species and the wader anything from a Dunlin to a Curlew. I have also seen one on an Oyster-Catcher. If the Sparrow-Hawk is not actually seen on the body great care must be taken in the diagnosis of what bird (or animal) has been making a meal. In that district there is a great variety of meat-eaters: Raven, Peregrine, Buzzard, Carrion-Crow, Magpie, Sparrow-Hawk, Kestrel, Merlin, and all the Gulls. I have seen a Great Black-backed Gull feeding on a Buzzard that some misguided person had shot, and a Lesser Black-back feeding on a Greater. Another day I saw a Black-headed Gull strip the breast off a Wigeon I had shot in less than two minutes.

A Sparrow-Hawk will certainly take the smallest bird for a meal, but I do not quite know what is the largest: probably a Grouse or Wood-Pigeon, although, as I have said in a previous article, I have seen them attack mature cock Pheasants.

What is the favourite food of the Sparrow-Hawk? That is a question that I have asked myself hundreds of times but found no answer to as yet. The fact that one has seen more of one species eaten than of another is no guide even if both are common. I think the Sparrow-Hawk is more or less content with what it can get most easily with a few exceptions: it does not appear to care for shiny birds. For example: when young Starlings are flying they figure very frequently on the bill of fare. On the other hand I have never seen old Starlings completely eaten, while I have more than once known a Sparrow-Hawk kill an old Starling and leave it untouched. I have never known one take an adult Magpie, a bird which is very common in parts near Felsted, although I have seen as many as four dead Jays on a nest together.

In the summer the common Warblers and the Tits are frequently taken, but the birds that are most often caught are those that make a habit of perching on outstanding twigs, or in conspicuous places. Hence Sparrows, Linnets, Greenfinches, Yellow-hammers, Chaffinches and young Starlings, are most liable to be taken. Larks were formerly taken very frequently but now not nearly so often. A few years ago the sides of the road were used by Larks for dust-bathing and frequent fatalities resulted, but the advent of tarred roads removed this danger.

In winter birds that move about in flocks are of course those that are most frequently caught. These are the same

as those that supply most victims in the summer, except Starlings, with the addition of Goldfinches, Redwings, Fieldfares, Golden Plover and Lapwings. The bigger the bird the less frequently is it taken. Flocks of Meadow-Pipits on migration sometimes come in for a good deal of trouble. Lesser Redpolls, Bramblings and other small birds that flock of course get molested, but one does not see them really often. Of the larger birds, Wood-Pigeons, Stock-Doves, Partridges and Lapwing seem to be taken most frequently. These are preyed on at all times of the year, but very many Pigeons are taken from the nests. Many Lapwings are also taken when they are actually nesting. If Sparrow-Hawks confined themselves to an occasional Partridge out of a covey the harm would not be very great. My experience, however, is that they do most harm to the Partridges when they have paired. Last year (1931) I must have seen a dozen eaten during April only and that, too, where stocks were rather less than moderate. In my opinion adult Sparrow-Hawks do not do a very great amount of harm to young wild game. My own observations tend to show that it is young birds just learning to feed themselves that do most damage to Pheasants. They strike at the young birds when they are perching on the tops of the coops or when they first begin to climb up to roost in the trees. Once this habit is started it can become a very serious nuisance as the other birds are scared very badly. It is usually a young hen Sparrow-Hawk that does this.

Some birds show a penchant for a particular food. A year or two ago I had a drawer half full of wing and tail-feathers of Cuckoos eaten by one Sparrow-Hawk ; for three years in early May that hawk fed several times on newly returned Cuckoos which had retired to the shelter of a wood for warmth.

I have records of Sparrow-Hawks eating several Great Spotted Woodpeckers, and more than one Lesser-Spotted.

I was very pleased on January 28th to find one eating a Little Owl quite close to Felsted School; I don't care how often that bird makes a meal if it keeps to the same diet.

Usually a Sparrow-Hawk beheads a bird first thing after killing it. The male does this practically always before bringing his capture for food for the nestlings, especially if he actually deposits it on the nest. Yet I have often noticed that when a nestling is old enough to feed itself the head is

very often left until it has had all it wanted of the rest of the body. I have also seen old birds leave the head of quite a small bird until the end. If the Sparrow-Hawk is very hungry the whole head is eaten ; if not, the bill is usually left. Very often the intestines are eaten first and then the breast. After that the legs and wings are picked. The amount



SPARROW-HAWK: Sometimes they swallow quite large legs.

(Photographed by J. H. Owen.)

of bones left depends on the hunger of the hawk. If a Sparrow-Hawk is disturbed from its prey it will often return to it, but the interval before the return may be a matter of hours.

When a Sparrow-Hawk makes a meal by the side of a hedge it is usual to find the remains of the carcase on the spot.

On the other hand anything left over, after a meal on the nest, is carried away to some distance and dropped. This is the rule until after the young can feed themselves, and then an accumulation of picked bones may be seen on or under the nest. Likewise at a regular feeding-place, although one may often find many feet and leg bones, wings and parts of heads, one rarely sees the bigger bones and I think these are carried away. From a hide I have watched Sparrow-Hawks swallow the legs of quite large birds and yet I can never find a pellet with a really large bone in it. There is therefore room for much investigation still in the manner of disposal of the food by Sparrow-Hawks. The pellets, when freshly thrown up, are nearly black and often moist. After a few days they become browner and firmer. In size they are usually small, about the size of the top joint of the little finger. It is quite unusual to see one more than an inch and a half in length.

I do not think a Sparrow-Hawk will eat eggs purposely. I have found eggs, whole and otherwise, at a feeding-place among the remains of the victims. I have also found eggshells in pellets. My explanation is that if the egg was uncovered it was not eaten; the shells in the pellets were from eggs that were unwittingly swallowed as the hawk bolted the intestines.

I have never known a Sparrow-Hawk drink or seem to want to drink. More than once I have kept nestlings and adults in captivity. When I gave them water in a shallow bowl the only use I ever saw them make of it was for bathing. If there has been no rain for a few days in summer a Sparrow-Hawk will stop in the middle of a meal and hold its body with wings and tail spread to catch the rain if a shower comes on. I had exactly the same experience with Owls and Kestrels that I had as pets.

I append a list of birds I have found eaten by the Sparrow-Hawk, the chief sources of information being the hawks' nests and feeding-places. This list seems enormous, but it must be borne in mind that a pair of Sparrow-Hawks during the year, counting the time they feed their young, need the equivalent of something like 2,000 small birds; also that I have been devoting a very great amount of time to the study of the Sparrow-Hawk since 1910 and have been very fortunate in my observations and the help I have had towards getting them.

A. Birds Caught and Eaten by Sparrow-Hawks.

- 20 or more times.* Starling (immature), House-Sparrow, Hedge-Sparrow, Chaffinch, Greenfinch, Goldfinch, Linnet, Yellow Bunting, Great Tit, Blue Tit, Meadow-Pipit, Sky-Lark, Robin, Willow-Warbler, Whitethroat, Blackbird, Song-Thrush, Fieldfare, Stock-Dove, Wood-Pigeon, tame Pigeons, Lapwing, Golden Plover, Partridge (full grown), Partridge (young), Pheasant (young).
- 10 to 20 times.* Jay, Starling (full plumage), Tree-Sparrow, Bullfinch, Long-tailed Tit, Wagtail, Lesser Whitethroat, Garden-Warbler, Blackcap, Mistle-Thrush, Redwing, Cuckoo (adult), Moorhen (full-grown).
- 2 to 10 times.* Brambling, Siskin, Redpoll, Reed-Bunting, Tree-Pipit, Marsh-Tit, Coal-Tit, Flycatcher, Swallow, Martin, Cuckoo (immature), Green Woodpecker, Great Spotted Woodpecker, Lesser Spotted Woodpecker, Teal, Turtle-Dove, Dunlin, Redshank, Snipe, Moorhen (in down), Coot (young)*.
- Only once.* Tree-Creeper, Nuthatch, Redstart, Nightingale, Wheatear, Whinchat, Sand-Martin, Little Owl, Common Sandpiper, Red Grouse.

B. Birds found dead and eaten by Sparrow-Hawks.

Sparrow-Hawk, Sheld-Duck, Mallard, Teal, Wigeon, Scaup, Pigeons, Golden Plover, Lapwing, Oyster-Catcher, Dunlin, Redshank, Curlew, Woodcock, † Snipe, Moorhen, Coot, Partridge.

* These were half-grown birds caught on the land by a small pond where they were hatched.

† This was shot at dusk and could not be found that night ; next morning a Sparrow-Hawk was feeding on it. (Lamphey, Pembroke.)

SOME OBSERVATIONS UPON THE NOTES AND BEHAVIOUR OF THE GREEN SANDPIPER WHEN FLUSHED.

BY

GEOFFREY C. S. INGRAM and H. MORREY SALMON.

COMPARATIVELY little appears to have been written relating to the behaviour and calls of the Green Sandpiper (*Tringa ochropus*) in this country, when flushed, and so possibly the few observations we have been able to make may add a trifle to the sum of general knowledge, especially as they do not altogether agree with the descriptions already published.

The *Practical Handbook* states (Vol. II., p. 617) that it "rises with a sharp 'tui tui tui', zigzags in rapid flight for a few yards, then mounts high and goes clear away", while T. A. Coward in his *Birds of the British Isles* (Vol. 2, p. 164) describes it as "easily flushed it rises high towering to a great height" and "almost invariably it calls on rising a loud clear 'toie, toie, toie', with a rounder, fuller o-sound than the call of the Redshank. Though it does not as a rule alight within sight it will return to the same spot when the coast is clear."

It will be seen that in each case emphasis has been placed upon three characteristics: the triple call, which is the only one mentioned, the habit of towering, and a disinclination to alight again anywhere in sight.

We have observed this species upon forty-three occasions in numbers varying from one to four together, but it is only during the last two years that we have been able to make anything like close observations. On the sixteen occasions they were seen prior to 1930, our notes only mention towering on four, while no special attention was paid to call-notes other than recording the fact, and therefore no detailed records are available, but on four occasions they are noted as rising with a call and apparently no sound was heard on any of the other twelve. The birds were not marked down and so were not flushed more than once.

In 1930 a bird first seen on October 5th remained about the same place until November 16th, or at least we presumed it was the same bird. On October 5th it was flushed four times running and on each occasion it flew off low and with direct flight over the water, alighting again within sight. No note of any kind was uttered, and this behaviour was repeated on five subsequent occasions, the bird being flushed

twice on each visit, that is ten times altogether. On November 16th it rose with a loud call, and towering, flew out of sight and was not seen again.

Our observations for 1931/32 are far more varied and are given in the form of extracts from our diaries, our notes being made on the spot.

October 4th.—One, flushed twice, and each time it rose silently and flew low over the water.

October 11th.—Two from the gully below the reservoir dam. One rose silently, and the other with a triple call "*kwerl-weet-weet*," repeatedly occasionally while in flight. Both flew low up over the dam and alighted on the pitching of the reservoir, and, when again flushed, flew off low over the water, one bird uttering the same call. Flushed a third time, separately, for they were feeding some distance apart, the first went off quite silently, flying low, and the other calling "*kwerl-weet-weet*," also flying low.

October 18th.—Four, all feeding together at the edge of the water, Lisvane Reservoir, and we watched them from cover for a considerable time. They bob less frequently than the Common Sandpiper and the tail is not so constantly in motion. Silent when running about and feeding, but two flew 50 to 60 yards farther along calling "*kwee-weet, kwee-weet, kwerl-weet-weet*". When the other two joined them the four flew together along the water's edge for a further hundred yards or so, rising with a rippling, bubbling call, "*klu-ludle-lu-ludle-lu-ludle*", followed by a sharp "*wit-wit*". On being flushed they rose to about 50 to 60 feet and circled around over the reservoir occasionally calling "*kwerl-weet-weet*", but alighted again in a few minutes.

October 25th.—Two on Lisvane Reservoir. One called "*kwerl-weet-weet*" as it flew off low over the water to the other side (200 yards), the other rose silently and followed in a similar manner, both recrossing again silently as we neared them.

November 15th.—One flushed from the gully at 4 to 5 yards range. It rose silently and just skimming the grass topped the dam and went down on the reservoir pitching. We walked right on to it there, at 3 to 4 yards, when it skimmed off over the water silently, mounting once to about 50 feet and then dropping again. Flushed for the third time it flew off over the water quite silently.

November 22nd.—Two flushed, at 25 to 30 yards, from the gully. Got up calling loudly "*kwee-weet*", and

"*kwerl-weet-tweet*", and flew right away out of sight but did not tower.

December 6th.—One flushed from the gully at 10 to 12 yards range. Rose silently and flew up over the dam about one foot above the grass and then out over the reservoir at the same height.

December 13th.—One flushed from the south-west corner of Llanishen Reservoir at 4 to 5 yards. Flitted off silently just over the surface of the water and, crossing the dam, went down on the gully. Two were put up from there at 25 to 30 yards, one rising silently and the other calling loudly "*kwee-weet, kwerl-weet-tweet, kwerl-weet-tweet, kwee-weet-a-weet*", and then "*klu-ludle-lu-ludle-lu-ludle, wit-wit-wit, kwerl-weet-tweet*", and after alighting "*kwer-weet*". Flushed again at 10 to 12 yards both rose together, one calling a sharp "*ple-ple*", followed by the rippling "*klu-ludle-lu-ludle-lu-ludle*", and then "*wit-wit-wit*", the other making off silently, low across the water, while the first towered to 300 to 400 feet, calling repeatedly "*klu-wit*" as it flew off, but it circled back, still calling, and passing overhead dived down to the gully again, the last few yards very fast and steeply. We flushed the silent bird again, and this time it rose to 50 to 60 feet and also dived down to the gully, steeply and swiftly.

December 20th.—Two flushed from the gully at 20 to 25 yards. Rose with a rapid succession of the sharp "*ple*" note, varied with an occasional "*wit*" and "*klu-wit*" as they flew up the gully below the banks, and then rose and crossed low over the reservoir dam. Flushed again at 6 to 8 yards they flew out over the water with loud "*klu-wits*" and, turning, crossed over into the gully again. From here they were flushed for the last time and once more rose with a medley of rapid "*ples*" and an occasional "*wit*", these giving place to the flight-call "*klu-wit*" as they flew out of sight.

January 17th, 1932.—Two flushed from the gully at 10 to 12 yards flew low up the stream for a few yards calling "*kwee-weet, kwee-weet, kwee-weet-a-weet*", with an occasional "*wit*". They then rose over the dam, their notes changing as they did so to "*klu-wit, klu-wit, klu-wit-a-wit*". It was impossible to be certain, but apparently only one bird was calling. They circled around about 20 feet up, as though returning to the gully, but finally went off over the water and we lost sight of them. On returning to the gully about an hour later we flushed them from almost the same spot.

Both rose silently, but as they crossed the dam one began to call "*wit-wit, klu-wit, klu-wit, wit-wit*", and both flew out a short distance over the water calling "*kwee-weet, kwee-weet*", and again turned and alighted on the pitching about 200 yards away. We descended the dam and, walking below it, crossed again almost on top of them, flushing them at 8 to 10 yards. They flew out over the water, one bird calling very rapidly "*kle, kle, wit, wit, wit, kee-wit, kwee-weet, kwee-weet-weet*", and then both towered high overhead, circling around for nearly two minutes, one calling continually "*kwee-weet, kwee-weet, kwee-weet-weet, klu-wit, klu-wit, klu-wit-wit*". We lost sight of them, but they must have descended to the pitching of the south dam for we flushed them from there some time later, when they skimmed off low over the water calling "*kwee-weet, kwee-weet, kwee-weet-weet*".

February 21st.—One flushed from the gully rose silently, and after flying a little way up the stream, flew low over the dam and went down on the pitching of the reservoir. Flushed from there it once more rose silently and just skimmed over the water to the other side. When put up from there it rose to some 50 to 60 feet and without a note of any kind flew across to the other reservoir. It was flushed there and simply skimmed off over the water silently and was not seen again.

February 28th.—Three flushed from the gully at 10 to 15 yards; their calls, if any, were drowned at that distance by the fierce wind. They flew up the gully and alighted again, and it was possible to get to within 5 or 6 yards of them before they caught sight of us and rose calling a succession of sharp "*klees*" and "*wits*". Flying low they just cleared the dam and alighted on the reservoir pitching, and when flushed from there skimmed off over the water to the other side, the wind again preventing any calls being heard.

March 6th.—One from the gully rose silently and flew low over the dam and alighted on the reservoir pitching. Flushed from there it skimmed the water for some distance and then mounted on a long slant to a great height and disappeared; no notes were heard, but there was a high wind.

March 13th.—One from the gully rose with a succession of "*klees*" and "*wits*", also "*kle-weet-kle-kle-weet, kwee-weet*", and then towered calling "*kwee-weet-weet*", repeating this call five times, and disappeared still flying high. Three more were flushed farther along the gully and rose with a succession of "*klees*" and "*wits*" and crossed low over

the dam calling "*kweet-kwee-weet-kweet*", and alighted on the reservoir pitching but moved again quickly and silently, resettling twice before finally alighting. Flushed at 5 or 6 yards they rose calling "*klee*" and "*wit*", and mounting high circled around calling all the time "*kwee-weet, kwee-weet-weet*", varied by "*klu-wit, kwer-weet, too-wit*", and also occasionally a slower "*too-twee*".

March 20th.—One from the gully rose silently and flying low crossed the dam and skimmed over the water to the other side without uttering any call.

March 27th.—Two from the gully where they were feeding apart. They rose separately and silently, flying low, over the dam, and alighting on the reservoir pitching.

April 3rd.—One from the gully rose silently and crossing low over the dam flew out over the water, but turning, recrossed the dam and went down into the gully again. Flushed once more it repeated this flight but, although it returned to the gully, it did not alight but flew up again, towered to a great height and flew out of sight. It was apparently silent all the time.

April 10th.—Two from the gully rose calling "*wit, wit, klu-lu-wit, klu-lu-wit, wit, wit*", and flying low crossed the dam, alighting somewhere out of sight.

April 17th.—Two from the gully, separately, both rising silently and flying low, skimmed over the water out of sight. On this date Common Sandpipers (*Tringa hypoleucos*) were also seen.

April 24th.—One feeding on reservoir's edge close to three Common Sandpipers. All rose together and skimmed off over the water, the Green silently, the Commons calling loudly. The Green alighted by itself on the opposite side of the reservoir, while the Commons circled back to near the place they were first seen. This was the last time a Green Sandpiper was seen.

The reservoirs were visited weekly during the period between October 4th, 1931, and April 24th, 1932, and also after the latter date, but no birds were seen except on the dates recorded, although a careful search was made on every visit; it seems probable, however, that they must have been somewhere in the immediate neighbourhood during the whole of the seven months, that is of course assuming that those we saw so constantly were individuals of the same party and not new arrivals; it seems less probable that the latter alternative should be the correct one.

Summing up our observations, it is apparent that the triple call variously described as “*tui tui tui*”, or “*toie toie toie*”, does not in all cases consist of three similar notes, but rather of three dissimilar ones, the first of which at any rate is very distinctly different from the other two, in fact we never heard anything resembling the triple repetition of a single note, and this statement appears to be supported by a quotation, sent to us by our friend Bertram Lloyd, from a translation of A. Voigt's *Vogelstimmen*, 8th edition, 1920, p. 235. “The first ones I observed went off uttering a musical ‘*Dlu-e*’ call, but later I constantly heard flying birds utter a cry ‘*Djui-it*’ or ‘*Djui-it-it-it*’, as did Hesse, who syllables it as ‘*Gluhit-wit-wit*’”.

It is interesting also to compare the flight notes of the New World representative of this species, the Solitary Sandpiper (*Tringa solitaria*), with those we heard, and they are given in the *Practical Handbook*, p. 619, as “*Pect-weet*” or “*peet-weet-weet*”.

An astonishing variety of other notes were frequently uttered, but when two or more birds were seen together it was not always possible to be certain how many were calling, for with one or two exceptions, they invariably kept close together when rising and while in flight. It may well be that certain combinations of notes we heard were used by one sex only, while the other remained silent or only made use of such general calls as the alarm, which was generally a rapid succession of a sharp note repeated a varied number of times which can be written as either “*pee*”, “*plee*”, or “*klee*”, these being followed by the flying-away notes, sometimes a sharp “*wit*” repeated one or more times, often “*kwee-weet*”, and when flying low over the water “*kwee-weet*” followed by “*kwerl-weet-tweet*” (which was the outstandingly characteristic call in October to December but not heard later), occasionally varied by “*kwee-weet-a-weet*” or “*kwee-weet-weet*,” while the calls heard from birds towering were “*klu-wit*” or “*too-wit*”, but sometimes “*kler-weet*”.

The most interesting call was the one used by one bird when in company with others, the rippling “*klu-ludle-lu-ludle-lu-ludle*” heard on October 18th (four birds together) and again on December 13th (two birds together). Upon first hearing this we were instantly reminded of Miss Haviland's (Mrs. Brindley) description of the calls of her honeymooning Wood-Sandpipers (*Tringa glareola*) in *A Summer on the Yenesei*, of which she syllables “*taludle, taludle, lirra, lirra*,”

taludle". It seems quite possible that the birds we heard were males uttering some part or variation of their spring love-song, although it was not heard after December 13th.

Bertram Lloyd has here given us another extract from Voigt's book, p. 236. "Dobbrick (who has observed them for six years) says 'In the spring season . . . they utter a series of fluting notes a "*kick, kick*" mingled with a three-syllabled "*Tlë-diht*" (often repeated several times) sometimes varied to a "*Kikilluh*" in which the first syllable is stressed'. According to Christoleit the pairing-season song has a silvery fluting sound something like '*Tit-luid-ie-tit-luid-ie*', the constantly recurring motif consisting of a short '*Tit*,' a rising '*Thui*' and a falling '*Die*'."

Another point that emerges is the totally different behaviour of individual birds even when two were flushed together. The number of silent, low-flying birds is remarkable, the proportion being roughly two silent to one calling, and it is also evident that towering is not a constant characteristic, neither do they always evince a great desire to fly right away out of sight.

How far our birds' behaviour was influenced by their immediate surroundings is a question that can only be answered by further observations in different localities. Our records were all made upon two large, artificial reservoirs, around two sides of which a shallow stream runs between deep banks in an artificial gully, this last a very favourite haunt.

Charles Oldham, who has kindly given us his experiences with this species in Cheshire and elsewhere over a number of years, has only three notes of birds that flew a short distance after being flushed once, but on being put up again they flew right away, and he has only one record of a silent bird. He regards the triple call "*tui, tui, tui*" as characteristic and has only once noticed a disyllabic call, and once a musical "*tullic, whit, whit*".

Similarly Bertram Lloyd, amongst a number of records made at the Tring Reservoirs, notes only one bird which on being flushed twice flew off quietly and low to no great distance, and one which towered silently. He also considers the triple "*tui, tui, tui*", once "*tui, tui*", the characteristic call, but also once records "*wit, wit, twee, twee, twee*."

RECOVERY OF MARKED BIRDS.

RETRAPPING RECORDS.

All the birds in the following lists were ringed as adults unless otherwise stated. In cases where a bird has been retrapped several times the dates of recovery are put in a second line.

STARLING (*Sturnus v. vulgaris*).

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
Broughty Ferry (Angus).			Oxford.		
By T. L. Smith.			By Oxford Ornithological Society.		
Y.3362	22.12.25	16.1.31	S.2360	30.1.30	30.5.31
W.5671	15.5.27 juv.	12.1.31	S.2366	16.2.30	12.3.31
W.5801	27.11.27	1.1.29			
		7.3.31			
T.5410	6.1.29	8.3.31	R.5677	3.11.30	12.11.31
T.5418	3.2.29	2.3.31	R.7189	10.11.30	1.12.31
T.5524	8.6.30	7.3.31	P.2774	30.1.31	23.11.31
Wilmslow (Ches.). By E. Cohen.			Holme Hale (Norfolk).		
W.3859	18.5.27	17.2.31	By R. S. Broke.		
R.8660	6.12.30	17.5.31	S.8634	20.12.29	31.12.31
R.8656	24.12.30	May 1931	Bluntisham (Hunts.).		
		(2)	By E. Peake.		
R.8671	5.1.31	15.5.31	T.5106	7.2.29	5.1.32
Great Budworth (Ches.).			T.5127	10.3.29	6.4.31
By A. W. Boyd.			Hayward's Heath (Sussex).		
T.4423	20.5.29 juv.	2.3.31	By A. Morrison.		
R.1114	9.7.30 juv.	28.2.31	P.1944	15.8.30	9.1.31
R.1137	25.11.30	25.3.31	Fishbourne (Sussex).		
Malvern (Worcs.).			By R. Carlyon-Britton.		
By P. E. A. Morshead.			W.6188	14.9.30	28.4.31
V.6810	20.9.27	3.7.31			

GREENFINCH (*Chloris ch. chloris*).

Great Budworth (Ches.).			K.8779		
By A. W. Boyd.				27.1.31	25.2.31
H.3932	30.1.29	14.2.31			
H.4008	3.3.29	11.3.31	Oxford.		
H.5919	30.1.30	22.2.31	By Oxford Ornithological Society.		
H.5929	9.2.30	11.1.31	L.1839	6.2.31	25.1.32
J.5584	17.3.30	25.3.30	L.1869	28.2.31	26.3.31
		Feb. 1931 (2)			
J.5600	22.3.30	26.4.30	Cley (Norfolk). By R. M. Garnett.		
		15.3.31	J.3760	12.3.31	12.2.32
J.5628	29.4.30	May 1931 (2)	Saxlingham (Norwich).		
		20.6.31	By S. Wilson.		
J.5687	23.5.30	25.5.30	K.4752	24.6.30	9.8.31
[Ap. 1931 (4) ; 17.5.31 ; 15.6.31					
J.5992	23.6.30	31.3.31	K.8498	27.1.31	3.7.31
		Ap. 1931 (3)	K.8513	14.3.31	16.7.31
J.6117	23.11.30	26.1.31	L.4309	25.3.31	2.5.31
[Feb. 1931 (4) ; Mar. 1931 (2)					
K.8653	4.1.31	Jan. 1931 (2)	L.4310	25.3.31	15.7.31
		16.5.31			

GREENFINCH—*continued*.

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
Cambridge.	By Sanctuary Club.		TU384	16.2.31	22.2.32
.2188	16.2.31 Feb. 1931 (2)		TU388	16.2.31	25.1.32
	[Mar. 1931 (2) ; 7.3.32		L.3186	23.2.31	2.2.32
Cambridge.	By H. Rait-Kerr.		L.3232	1.3.31	14.2.32
.5304	28.1.31 Feb. 1931 (2)		L.3243	2.3.31	3.2.32
	[3.4.31 ; 4.5.31		L.4062	25.3.31	30.4.31
	Bluntisham (Hunts.).				20.2.32
	By E. Peake.		L.4076	17.4.31	30.1.32
.5270	14.2.31	14.2.32			11.2.32
.6295	16.2.31 Feb. 1931 (6)		L.4079	20.4.31	16.2.32
	[3.3.31 ; 17.11.31 ; Feb. 1932 (2)		L.5207	27.4.31	16.2.32

CHAFFINCH (*Fringilla c. cælebs*).

Upper Largo (Fife).			Oxford.		
By A. H. Eggeling.			By Oxford Ornithological Society.		
.8313	31.12.30	21.7.31	H.6683	13.11.30 Feb. 1931 (2)	
Ullswater (Westmor.).				1.3.31	
By H. J. Moon.			Bluntisham (Hunts.)		
.8126	—, 6.28 Mar. 1931 (2)		By E. Peake.		
.7228	—, 6.29 juv.	12.1.31	L.3226	28.2.31	9.3.31
		9.3.31			28.1.32
.9971	18.3.30 juv.	19.3.30	L.3991	8.3.31	5.5.31
	[31.1.31 ; 14.3.31			[12.2.32 ; 30.3.32	
.4273	19.3.30	21.3.30	Battle (Sussex). By H. Whistler.		
		13.3.31	J.7025	13.2.31	18.2.31
.4264	29.3.30	31.1.31			9.5.32
	Mar. 1931 (2)		Shanklin (I.O.W.).		
Great Budworth (Ches.).			By J. F. Wynne.		
By A. W. Boyd.			L.4197	18.4.31 Mar. 1932 (6)	
.4021	3.3.29	5.1.31	L.4199	18.4.31 Ap. 1931 (3)	
Malvern (Worcs.).				Mar. 1932 (4)	
By P. E. A. Morshead.					
.1171	19.5.30 juv.	21.3.31			

TREE-SPARROW (*Passer m. montanus*).

Great Budworth (Ches.). By A. W. Boyd.

.5409	1.6.29 juv.	30.5.31	J.5705	28.5.30 juv.	Jul 1931 (2)
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YELLOW BUNTING (*Emberiza c. citrinella*).

Gt. Budworth (Ches.). By A. W. Boyd.

.5365	6.4.29 Jul. 1931 (2)		J.5611	25.3.30	14.5.30
.5946	6.3.30	10.5.31	(J.5829)	[21.6.30 ; 23.6.31 ;	
.5953	10.3.30	21.6.30		[Jul. 1931 (2)	
	[20.7.30 ; 14.6.31		K.8585	4.1.31	5.7.31
.5625	24.4.30	14.7.31	K.8612	9.1.31	2.7.31
			J.6145	23.6.31	1.10.31

REED-BUNTING (*Emberiza sch. schœniclus*).

Wilmslow (Ches.). By E. Cohen.

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
F.7204	19.2.28	27.2.30	G.5077	3.12.28	24.11.29
	Mar. 1931 (2)			[17.1.31 ; 28.2.31	
G.5023	24.3.28	30.4.28	H.8676	1.1.30	Jan. 1931 (3)
	[17.1.29 ; 26.2.29 ; 18.12.29 ;				28.2.31
	[Mar. 1930 (2) ; 14.12.30		J.5464	13.3.30	28.2.31

MEADOW-PIPIT (*Anthus pratensis*).

Oxford. By Oxford Ornithological Society.

H.6970	21.1.31	31.1.31	[Feb. 1931 (2) ; 31.10.31 ; 4.2.32
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MISTLE-THRUSH (*Turdus v. viscivorus*).

Wilmslow (Ches.). By E. Cohen.

V.8524	8.3.29	1.3.31
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SONG-THRUSH (*Turdus ph. clarkei*).

Upper Largo (Fife).

By W. J. Eggeling.

R.1499	21.3.30	4.8.31
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Wilmslow (Ches.). By E. Cohen.

S.8465	3.12.29	14.12.30
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R.8659	2.1.31	4.3.31
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11.6.31

R.8667	4.1.31	1.3.31
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12.6.31

Gt. Budworth (Ches.).

By A. W. Boyd.

T.4316	23.2.29	21.2.30
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2.3.31

T.6067	31.5.29	Mar. 1931 (3)
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R.1186	12.3.31	30.3.31
		Nov. 1931 (2)

Malvern (Worcs.).

By P. E. A. Morshead.

U.2773	6.11.28	30.5.31
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U.2775	17.12.28	9.3.31
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Oxford.

By Oxford Ornithological Society.

P.2635	4.2.31	6.2.31
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[16.3.31 ; 9.11.31 ; 7.3.32

Kelling (Norfolk).

By R. M. Garnett.

S.7521	11.3.31	29.1.32
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BLACKBIRD (*Turdus m. merula*).

St. Ola (Orkney).

By D. J. Robertson.

H.7629	17.7.29	13.6.31
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Dornoch (Suth.). By E. Cohen.

V.8507	2.7.28	1.8.29
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30.6.31

T.9904	22.7.29	1.7.31
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R.8582	29.6.30	30.6.31
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Broughty Ferry (Angus).

By T. L. Smith.

W.5819	18.12.27	18.11.29
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[27.1.31 ; 7.3.31

T.5393	2.1.29	1.1.31
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8.3.31

T.5620	19.11.29	Dec. 1929 (2)
		[5.2.31 ; 2.3.31

T.5623	21.11.29	22.12.29
		[22.2.31 ; 7.3.31

Ullswater (Westmor.).

By H. J. Moon.

S.5739	19.3.30	20.3.30
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[31.1.31 ; 9.3.31

J.4261	22.3.30	7.3.31
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13.10.31

Wilmslow (Ches.). By E. Cohen.

R.8617	6.8.30	13.3.31
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R.8618	6.8.30	13.6.31
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R.8621	8.8.30	8.3.31
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BLACKBIRD—*continued*.

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
Gt. Budworth (Ches.).			Woodford Green (Essex).		
By A. W. Boyd.			By London Nat. Hist. Soc.		
V.543I	17.12.27	1.6.29	T.6868	14.4.29	13.5.3I
		9.1.3I	R.6155	22.6.30	5.7.30
.4314	20.2.29	3.3.29			6.7.3I
	Mar. 193I (3)		R.616I	29.6.30	25.6.3I
.6049	29.5.29 juv.	3.8.30			1.7.3I
	[8.1.3I ; 1.3.3I ; 29.8.3I		R.6174	7.9.30 June 193I (3)	
.1119	28.7.30	28.2.3I	R.6175	17.9.30	14.12.30
		12.3.3I			16.5.3I
.1161	1.3.3I	2.11.3I			
Malvern (Worcs.).			Sway (Hants.). By G. Marples.		
By P. E. A. Morshead.			M.2659	3.9.3I	12.2.32
.6825	18.12.27	29.5.30			
		8.5.3I	Shanklin (I.O.W.).		
			By J. F. Wynne.		
	Oxford.		T.6572	20.2.29	3.3.30
By Oxford Ornithological Society.				[7.1.3I ; Mar. 193I (2)	
.2629	9.1.3I	25.11.3I	T.6573	26.2.29	29.11.3I
	Jan. 1932 (2)				13.1.32
.2639	1.3.3I	17.2.32	P.3043	25.1.3I	6.3.3I
				Mar. 193I (2)	
Kelling (Norfolk).			P.3049	6.2.3I	28.2.32
By R. M. Garnett.			T.7096	29.5.3I juv.	24.2.32
.4825	17.6.29	16.2.30			9.3.32
	[4.12.30 ; 9.3.3I ; 1.8.3I ; 3.3.32		P.4125	10.8.3I	12.3.32
.7374	9.3.3I	10.2.32	P.4131	21.9.3I	28.11.3I
.754I	16.3.3I	10.2.32		[12.1.32 ; 25.2.32 ; 18.3.32	
Cambridge. By Sanctuary Club.			P.4133	22.9.3I Jan. 1932 (2)	
.1770	26.1.3I Jan. 193I (2)		P.7722	29.9.3I	13.10.3I
	[Feb. 193I (7) ; 10.2.32			[26.1.32 ; Feb. 1932 (4) ;	
Bluntisham (Hunts.). By E. Peake.				[Mar. 1932 (6)	
.578I	28.3.3I	28.1.32			

REDBREAST (*Erithacus r. melophilus*).

Dornoch (Suth.). By E. Cohen.			H.9972	13.2.30 Mar. 1930 (3)	
I.8645	22.7.29	11.7.30			13.3.3I
		7.7.3I	Windermere (Westmor.).		
Broughty Ferry (Angus).			By E. Cohen.		
By T. L. Smith.			J.5448	27.12.29	26.12.30
.5716	10.9.26	19.12.26			3.1.3I
	[15.12.27 ; 4.11.28 ; 22.12.29 ;		J.6514	2.8.30	26.12.30
	[Jan. 193I (2) ; 7.2.3I				4.4.3I
.5770	18.12.27	7.3.3I	Ulverston (Lancs.).		
.5807	23.12.29	7.3.3I	By C. F. Archibald.		
Ullswater (Westmor.).			D.4588	9.11.28	12.9.3I
By H. J. Moon.			D.4590	22.1.29	9.9.3I
I.2868	27.2.29	15.1.30	D.4639	1.9.30	10.9.3I
		18.3.3I	Wilmslow (Ches.).		
I.2875	27.2.29 Feb. 1930 (2)		By E. Cohen.		
	[31.1.3I ; 4.2.3I		H.8673	12.1.30	4.1.3I
I.3027	13.1.30	13.1.3I			28.2.3I
		14.3.3I			

REDBREAST—*continued.*

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
Wilmslow (Ches.)— <i>continued.</i>			Oxford.		
J.5463	6.4.30	19.5.30 7.12.30	By Oxford Ornithological Soc.		
K.5987	14.7.30	14.12.30 Mar. 1931 (2)	H.6929	25.11.30	Jan. 1931 (3)
K.5988	15.7.30	18.7.30	[Feb. 1931 (2); 1.3.31; 23.11.31		
[16.8.30; 28.11.30; 24.1.31			L.1222	16.3.31	Mar. 1931 (2)
K.5989	19.7.30	27.7.30			15.4.32
		[28.2.31; 2.3.31	L.6972	12.8.31	21.8.31
K.6005	7.8.30	24.6.31			13.1.32
K.6011	16.8.30	Mar. 1931 (3)	Hungerford (Berks.). By G. Brown.		
		1.4.31	J.7603	25.6.31	juv. 14.1.32
K.6017	8.9.30	7.1.31	Kelling (Norfolk).		
Gt. Budworth (Ches.).			By R. M. Garnett.		
By A. W. Boyd.			K.9753	31.7.31	3.3.32
F.9044	18.5.28	30.12.28	K.9756	3.8.31	15.1.32
	[1.1.29; 30.1.30; 30.3.30;		Holme Hale (Norfolk).		
		[29.1.31	By R. S. Broke.		
H.3686	4.8.28	15.12.28	J.5518	6.1.30	31.12.31
[Jan. 1930 (2); 19.3.30; 7.4.31			L.2116	10.8.31	Dec. 1931 (2)
H.3752	8.12.28	16.2.29	L.2117	10.8.31	Aug. 1931 (2)
		5.1.31			[20.12.31; 10.1.32
J.5999	25.6.30	26.9.30	L.2124	15.8.31	Dec. 1931 (2)
	[16.12.30; Jan. 1931 (3)		Cambridge. By Sanctuary Club.		
	[4.2.31; Mar. 1931 (2)		L.1756	4.2.31	7.2.31
J.6040	24.7.30	Nov. 1930 (2)			[Jan. 1932 (3)
[24.12.30; Jan. 1931 (8); 1.3.31			L.2168	8.2.31	Mar. 1931 (6)
J.6073	10.8.30	26.10.30			[Jan. 1932 (2); Feb. 1932 (2);
	[5.11.30; Feb. 1931 (2);				7.3.32
	[Mar. 1931 (3); 1.4.31		L.2184	10.3.31	7.12.31
J.6084	17.8.30	19.10.30	Bluntisham (Hunts.).		
	[22.11.30; 4.1.31; 21.2.31;		By E. Peake.		
		[Mar. 1931 (2)	J.5222	30.8.29	1.12.29
J.6114	16.11.30	23.11.30		[9.1.30; 16.2.30; 16.10.31;	
	[12.12.30; Jan. 1931 (2);			[Nov. 1931 (3); Dec. 1931 (4)	
	[Feb. 1931 (5); 14.3.31		L.3199	24.2.31	29.12.31
J.6120	12.12.30	12.12.30	L.5248	8.7.31	Oct. 1931 (2)
[Feb. 1931 (5); Mar. 1931 (6)					Nov. 1931 (2)
L.5484	18.6.31	25.9.31	L.5286	20.7.31	14.12.31
		25.10.31			[19.1.32; Feb. 1932 (2)
Church Stretton (Salop).			Woodford Green (Essex).		
By W. A. Cadman.			By London Nat. Hist. Soc.		
K.8541	28.8.30	12.12.30	H.4149	25.12.28	27.1.29
	[19.4.31; Sep. 1931 (2)				[14.6.31; 26.7.31
Malvern (Worcs.).			J.9585	26.7.30	27.7.30
By P. E. A. Morshead.					[17.5.31; 27.6.31
G.2221	26.2.28	5.3.31	J.9590	10.8.30	Sep. 1930 (2)
		3.5.31		[21.12.30; 14.1.31; Feb. 1931 (3);	
J.6403	23.6.30	22.2.31			[10.5.31
J.6411	26.6.30	25.3.31	J.9594	24.8.30	23.11.30
K.6211	7.7.30	14.2.31		[Feb. 1931 (2); 9.3.31; 17.5.31	
K.5523	18.8.30	5.3.31	J.9596	19.10.30	19.2.31

REDBREAST—*continued.*

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
Hayward's Heath (Sussex).			H.2032		
By A. Morrison.			8.9.29 12.9.29		
K.7922	4.8.30	1.1.31	[23.12.29; Jan. 1931 (8);		
K.7923	4.8.30	1.1.31	[Feb. 1931 (2); Mar. 1931 (14);		
	[22.4.31; 11.8.31		[Ap. 1931 (11)		
K.7924	5.8.30	20.12.30	L.1442	3.2.31	10.2.31
K.7935	10.9.30	24.12.30	[Mar. 1931 (3); 28.4.31;		
		1.1.31	[Jan. 1932 (8); Feb. 1932 (6);		
K.7936	12.9.30	25.12.30	[Mar. 1932 (3)		
		5.8.31	L.1451	1.3.31	28.4.31
K.7938	16.9.30	28.12.30	[29.10.31; Nov. 1931 (3);		
		6.1.31	[13.12.31; Jan. 1932 (6);		
Battle (Sussex). By H. Whistler.			[Feb. 1932 (8); Mar. 1932 (23)		
L.6995	7.7.30	7.3.31	L.2155	11.3.31	Mar. 1931 (7)
		11.2.32	[8.4.31; 29.10.31; Nov. 1931 (4);		
Sway (Hants). By G. Marples.			[Dec. 1931 (4); Jan. 1932 (7);		
G.2825	2.1.31	Sep. 1931 (2)	[Feb. 1932 (6); Mar. 1932 (3)		
	[Oct. 1931 (3); Nov. 1931 (2);		L.4189	7.4.31	11.4.31
	[Dec. 1931 (4); Feb. 1932 (11)		[21.1.32; Feb. 1932 (3)		
N.1414	6.9.31	10.2.32	L.6512	12.8.31	2.10.31
N.1423	12.9.31	19.9.31	[Nov. 1931 (3); Dec. 1931 (2);		
	[Oct. 1931 (3); 31.12.31;		[Jan. 1932 (16)		
	[Feb. 1932 (6)		L.6520	22.9.31	Nov. 1931 (4)
Shanklin (I.O.W.).			[Jan. 1932 (3); Feb. 1932 (8);		
By J. F. Wynne.			[Mar. 1932 (4)		
H.2012	5.2.29	28.4.31	Chudleigh (Devon).		
	[Jan. 1932 (3); 6.3.32		By J. M. Hepburn.		
			J.5562	24.12.30	31.12.31

HEDGE-SPARROW (*Prunella m. occidentalis*).

Dornoch (Suth.). By E. Cohen			H.8672	30.1.30	1.3.30
H.8657	29.7.29	29.6.30		[14.7.30; 25.9.30; 3.1.31;	
		5.7.31		[26.2.31; 1.3.31	
J.6499	5.7.30	5.7.31	K.5994	30.7.30	4.2.31
Windermere (Westmor.).				[19.4.31; 8.5.31	
By E. Cohen.			K.6013	6.9.30	12.1.31
G.5029	7.4.28	7.4.29	K.6020	16.9.30	21.9.30
	[21.6.30; 10.1.31			[2.11.30; 4.1.31	
Wilmslow (Ches.). By E. Cohen.			K.6022	19.10.30	7.12.30
G.5031	15.5.28	14.7.30			7.2.31
		6.2.31	Gt. Budworth (Ches.)		
G.5075	1.9.28	11.2.30	By A. W. Boyd.		
	[16.5.30; 30.3.31		H.3718	25.8.28	29.9.28
G.5076	17.11.28	9.4.29		[29.12.28; 6.2.30; 5.2.31	
	[4.5.29; 15.11.30		H.5923	1.2.30	25.3.30
H.8667	23.11.29	4.3.30		[26.1.31; 6.3.31	
	[4.4.30; 23.6.30; 15.7.30;		J.5998	24.6.30	25.7.30
	[7.12.30; 18.2.31			[28.9.30; 16.11.30; 12.12.30;	
H.8671	30.1.30	28.2.31		[27.4.31	
		9.3.31			

HEDGE-SPARROW—*continued*.

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
Gt. Budworth (<i>continued</i>).			L.2136	16.9.31	18.9.31
J.6088	19.8.30	31.8.30			Dec. 1931 (2)
	[28.9.30 ; 12.10.30 ; 30.11.30 ;		L.9107	22.9.31	27.9.31
	[26.2.31 ; Mar. 1931 (2)				[22.12.31 ; 10.1.32
J.6099	23.9.30	28.11.30	L.9109	26.9.31	27.9.31
	[Jan. 1931 (2) ; 11.11.31				Dec. 1931 (2)
J.6107	11.10.30	Jan. 1931 (3)	Cambridge. By Sanctuary Club.		
		24.2.31	L.1763	26.1.31	Feb. 1931 (2)
J.6108	13.10.30	Jan. 1931 (2)		[Mar. 1931 (2) ; Dec. 1931 (2)	
		24.2.31	L.1791	2.2.31	Feb. 1931 (6)
J.6119	29.11.30	22.2.31			24.2.32
		1.3.31	L.1792	16.2.31	13.5.31
					25.1.32
Church Stretton (Salop).			Bluntisham (Hunts.). By E. Peake.		
By W. A. Cadman.			J.5232	6.1.30	20.2.31
K.8564	28.9.30	10.9.31			[26.3.31 ; 13.2.32
L.1404	27.12.30	10.9.31	J.5257	28.11.30	4.3.31
Malvern (Worcs.).			Hayward's Heath (Sussex).		
By P. E. A. Morshead.			By A. Morrison.		
K.6218	10.7.28	14.2.31	K.7932	6.9.30	22.4.31
K.5530	20.9.30	30.5.31	Fishbourne (Sussex).		
K.5537	5.10.30	Mar. 1931 (2)	By R. Carlyon-Britton		
Oxford.			TT.474	28.2.29	8.11.30
By Oxford Ornithological Society.			Sway (Hants.). By G. Marples.		
L.1918	23.1.31	14.1.32	N.1417	7.9.31	22.2.32
		[4.2.32 ; 4.3.32	N.1420	9.9.31	Nov. 1931 (6)
L.1315	27.1.31	Feb. 1932 (5)			28.2.32
		2.3.32.	N.1426	12.9.31	14.9.31
Kelling (Norfolk).				[Nov. 1931 (2) ; Feb. 1932 (8)	
By R. M. Garnett.			Shanklin (I.O.W.).		
J.3736	29.1.31	22.1.32	By J. F. Wynne		
Saxlingham (Norwich).			L.1454	7.3.31	Mar. 1931 (6)
By S. Wilson.				[Ap. 1931 (3) ; 3.11.31 ; 15.12.31 ;	
J.7727	18.4.30	20.5.31			[13.1.32
K.8496	27.1.31	29.4.31	L.6517	21.9.31	Sep. 1931 (2)
Holme Hale (Norfolk).				[Oct. 1931 (2) ; 14.1.32 ; 26.3.32	
By R. S. Broke.					
J.5505	12.8.30	28.8.31			
	[25.9.31 ; 29.12.31 ; 23.3.32				

TURTLE-DOVE (*Streptopelia t. turtur*).

Great Budworth (Ches.). By A. W. Boyd.

73710	8.7.25	9.7.26	RR4519	4.8.30	Aug. 1930 (2)
		9.6.31			June 1931 (2)

NOTES

PINK-FOOTED GEESE IN IRELAND.

IN the *Practical Handbook* the extraordinary fact is mentioned that there are only two records of the Pink-footed Goose (*Anser brachyrhynchus*) for Ireland, viz., co. Donegal, October, 1891, and co. Roscommon, February, 1908.

Messrs. Williams & Sons of Dublin have just given me two new and quite recent records of this bird in Ireland. The first was shot on the Wexford slob on December 7th, 1931, and the second occurred near Drogheda, in co. Louth, on January 6th, 1932.

These are probably due to the phenomenal increase in the number of Grey Geese during the past two years, not only in Ireland, but also in the north-west of England and south-west of Scotland, and to the crowding out of Pink-foots by Grey Lags in the two last-named districts. H. W. ROBINSON.

FULMAR PETRELS BREEDING ON INISHSHARK, GALWAY.

A FURTHER link in the breeding range of the Fulmar (*Fulmarus g. glacialis*) is formed by the discovery on June 16th, 1932, of a colony breeding on Inishshark, off the coast of Galway.

One of my main objects in visiting Inishbofin and this island was to ascertain if the Fulmar had established itself there. There was no sign of them on Inishbofin, but on Inishshark the birds were breeding scattered along the gigantic cliffs on the west side, but particularly opposite the Colleen rock and again opposite the pinnacle known as Boughil, where on one absolutely inaccessible ledge there appeared to be about twenty birds incubating.

When visiting the Bills Rocks off Achill earlier in the month there was no trace of Fulmars nesting—one only was seen in the vicinity of the rocks and one mid-way out from the Achill coast. Possibly they cannot gain a footing there, as every ledge appears occupied by the commoner species of sea-birds.

ROBERT F. RUTTLEDGE.

AVOCET IN SURREY.

ON June 14th, 1932, at Brooklands Sewage Farm, there was an Avocet (*Recurvirostra avosetta*) of which I obtained excellent views at about 75 yards. On the following morning when disturbed by men working on the farm it flew round calling

several times "*tleu*," but after a few minutes settled again. One of the men told me he had first noticed it on the 13th. On the evening of the 16th Miss E. P. Leach, Messrs. H. F. Witherby, A. H. Daukes and I saw the bird, an adult, under perfect conditions—feeding, preening and sleeping. It was fairly tame, not heeding the cars roaring round the track or aeroplanes low overhead. About 7.30 p.m. we flushed the bird, which disappeared, and to date (June 21st) has not been seen there again.

P. A. D. HOLLOM.

POMATORHINE SKUAS AND ICELAND GULL IN HEBRIDES.

DURING the last four years I have sailed almost daily from the Clyde to the Outer and Inner Hebrides, and every winter I see about half a dozen Glaucous Gulls (*Larus hyperboreus*), while Arctic Skuas (*Stercorarius parasiticus*) and Great Skuas (*S. s. skua*) are fairly common from spring to autumn.

As I have seen during this period only three Pomatorhine Skuas (*S. pomarinus*) and one Iceland Gull (*L. leucopterus*) these seem worth noting. The Pomatorhine Skuas occurred off Harmetray Island, N. Uist, on September 23rd, 1930 ; in the South Minch, 18 miles N.W. from Gunna Sound, on May 14th, 1932, and midway between Colonsay and Isles of the Sea on May 24th, 1932. The Iceland Gull, which was an immature bird, was observed in Castlebay Harbour, Barra, on May 25th, 1932. There had been a northerly gale since May 24th.

A. MACRAE.

MALE RED GROUSE CARRYING NEST-MATERIAL.

ON May 16th, 1932, in Skye I saw a male Red Grouse (*Lagopus scoticus*) with his bill full of dried grasses. I am not sure whether it is known that the male assists in the nest-making.

SETON GORDON.

BIRDS OF CAITHNESS.—This somewhat neglected county was visited in the latter half of May, 1931, by Misses E. V. Baxter and L. J. Rintoul, who give notes (*Scot. Nat.*, 1931, pp. 133-139) on the birds seen with references to their status as previously known. The chief differences since 1887, when Harvie-Brown and Buckley's *Fauna* was published, appear to be in the extension of range of Ducks and the Fulmar and the change in the status of some of the Passeres due to the growing up of trees in planted areas. One of the chief surprises was the abundance of Lesser Redpolls (*Carduelis f. cabaret*), a good many pairs being seen in woods at Sandside

and several at Langwell. This bird was previously considered to be only an occasional visitor to the county. The Great Tit (*Parus major*), first recorded in 1904, was found to be breeding regularly in old woods at Langwell. The Blue Tit (*P. cæruleus*) in 1887 was only known in the county from two or three specimens, but by 1907 (Bruce) had begun to breed and "is now well distributed in suitable places throughout Caithness". The Coal-Tit (*P. ater*), formerly considered rare, now breeds in several localities. The Long-tailed Tit (*A. caudatus*) is also now recorded as breeding. Of the ducks, Sheld-Ducks (*Tadorna tadorna*) were first found breeding by Mr. C. Oldham in 1927, and a number was seen and nesting burrows found by the present authors in 1931, the Gadwall (*Anas strepera*) and Shoveler (*Spatula clypeata*) now breed, and the Eider (*Somateria mollissima*), previously "only occasionally seen", is evidently now breeding, as four drakes and a duck were seen and a freshly-sucked egg was found. The history of the Fulmar (*Fulmarus glacialis*) is well known, and their increase since 1900 when they were first recorded on Dunnet Head is most remarkable. The present authors give details of their observations and remark that the number of Fulmars now breeding in Caithness is enormous.

In the same journal (1932, pp. 39-42) Mr. John Berry gives notes of birds seen in western Caithness in the autumn of 1931. Among these we note a Snowy Owl (*Nyctea scandiaca*) seen on November 5th at Loch More and another caught in a trap near there a short time previously, and three adult male Lapland Buntings (*Calcarius lapponicus*) identified clearly (and possibly more present) among Snow-Buntings on November 27th at Lochan Beul-na-Faire. Mr. Berry also describes a very large migration of Snow-Buntings on the 30th and gives some interesting photographs of flocks in flight.

BIRDS OF EIGG.—This island was visited by Mr. A. G. S. Bryson in June, 1930, and by Mr. G. Waterston in June, 1931, and their combined notes (*Scot. Nat.*, 1932, pp. 29-30) on the status of several birds are of interest. The Jackdaw (one in 1930, six in 1931) is recorded as an addition to the island list, while birds seen, which had not been noted for many years, were the Grey Wagtail, Ring-Ouzel, Wood-Pigeon and Partridge.

PIED FLYCATCHER IN GLOUCESTERSHIRE.—Mr. H. H. Davis writes that as there are not many reported occurrences of the Pied Flycatcher (*Muscicapa hypoleuca*) in Gloucestershire

it is worth recording that on May 11th, 1932, he had excellent views of a female among apple trees in a garden at Filton. The bird was no doubt on passage as Mr. Davis failed to find it on several subsequent visits.

EAGLE-OWL SEEN IN NORTH UIST.—Mr. J. M. St. John Yates writes (*Scot. Nat.*, 1932, p. 57) that on North Uist he saw on November 26th, 1931, an Owl which from its size could not have been anything but an Eagle-Owl (*Bubo bubo*). Mr. Yates approached the bird within a few yards and flushed it.

WHITE-TAILED EAGLE IN MULL.—Mr. J. A. Yeaman records (*Scot. Nat.*, 1932, p. 8) that he watched a White-tailed Eagle (*Haliaeetus albicilla*) on October 15th, 1931, on the hills near Benmore in the Isle of Mull. The bird, which appeared quite unalarmed, was observed through binoculars and it was noted that there were no signs of a golden head, while the tail was "entirely pure white".

FERRUGINOUS DUCK SEEN IN ABERDEENSHIRE.—Dr. C. H. Usher records (*Scot. Nat.*, 1932, p. 58) that on November 22nd, 1931, he saw a duck on the River Don near Donmouth which he identified as a drake *Nyroca nyroca*. He clearly made out its "chestnut-brown head and neck", white iris and white bar on a dark wing.

ROSEATE TERN BREEDING IN THE FORTH AREA.—Miss L. J. Rintoul and Miss E. V. Baxter record (*Scot. Nat.*, 1931, p. 168) that in 1931 they discovered a pair of Roseate Terns (*Sterna d. dougallii*) in a locality in Forth where common Terns were nesting, and watched the pair feeding a single young one.

REVIEW.

THE EXPERIMENTAL STUDY OF MIGRATION.

The Riddle of Migration. By Wm. Rowan. Baltimore (Williams & Wilkins Co.), 1931. xiv-151 pp., with 10 text figs. 11s. 6d. net from Baillière, Tindall & Cox, London.

Dr. William Rowan of the University of Alberta has given us a very readable little volume in which he discusses bird-migration from his own particular point of view, that of the experimental biologist. He has not attempted to survey all the aspects of migration, or to review its immense literature, but has concentrated his attention upon the part of the field in which his own special studies lie. His investigations into the stimulus to migration form a novel and important contribution to the subject: they are already known to ornithologists from a series of papers published by Dr. Rowan during the last few years, but a general account of them in book form is useful and should reach a wider audience.

In his earlier chapters Dr. Rowan sets the stage, so to speak, for the exposition of his main thesis. He begins with a statement of the anatomical and physiological principles that are relevant to his study. He proceeds to consider the environmental factors that make migration necessary, and also the climatic changes that have occurred during the later periods of geological time. The evolution of migration is then discussed, and finally the nature of the stimuli that evoke the annually recurring manifestations of the migratory instinct. The whole account is written with admirable clearness and simplicity; it is obviously intended largely for the general reader, but it will also provide ornithologists with a convenient summary of the author's theories and of the evidence upon which they are based.

Many of Dr. Rowan's general remarks about migration have an added interest because he is familiar with the phenomenon as it occurs in a region normally subject to a winter of great severity, and incapable at that season of supporting the life of the great majority of the species which visit it in the breeding-season or on passage. In dealing with the *raison d'être* of migration, too, he has at least one point that is new: he refers to the lack of ultra-violet radiation during the northern winter, and to the presumable effect of this upon species, such as seed-eaters, which get little Vitamin D in their food to make up for the absence of its formation in their bodies by photo-synthesis.

The author's experimental results and conclusions on the subject of the annual stimuli to migration have already been noticed in some detail in these pages (*British Birds*, 1927, XXI., 10). Briefly, he holds that the fundamental extrinsic stimulus is to be found in the lengthening or shortening of daylight—not, be it noted, in its absolute duration; that this induces the seasonal changes in the gonads; and that the intrinsic stimulus directly evoking the migratory impulse is probably given by a hormone secreted by the interstitial tissue of these organs at a particular stage in their recrudescence or regression. For much of this case he has already obtained experimental proof. He has kept Juncos and other summer visitant birds through the winter in outdoor aviaries at Edmonton, and with sufficient food they have thriven very well. He has shown that under these conditions a spring-like development of the gonads can be induced in mid-winter by artificially lengthening the successive days by the use of powerful lamps, or alternatively by the use of a mechanical "exercise bar." These and further facts of the same order have been proved by controlled experiments and by histological examinations; we may add, too, that in some part they have been confirmed for the Starling in the papers which Bissonnette and his colleagues have recently published in the *American Journal of Anatomy*.

The evidence as regards migratory behaviour is less complete. It shows that birds in which recrudescence of the gonads has been induced in mid-winter tend to leave the locality on release from the aviaries, whereas normal control birds have lost the urge to depart once the ordinary migration season is well past. Inconclusive, so far, is the evidence that birds (Crows) with gonads in a spring-like condition in November migrate *northwards* on release: Dr. Rowan apparently expects this, but it would not seem necessary to his theory, seeing that the factors determining the actual direction of flight may well be quite different from those evoking departure.

Dr. Rowan discusses only briefly the difficulty of applying his theory to migrants that reach or pass beyond the equator. These become

subject to lengthening daylight if and as they journey south of the line, but presumably without effect upon the gonads. On the other hand, the development of the gonads in due course must begin when daylight is either constant in length or actually shortening. It has therefore to be assumed that in these cases there is not a close relation throughout the year between the daylight factor and the state of the gonads, but that the latter is to some extent determined by intrinsic rhythm.

Mr. R. E. Moreau, in a recent discussion of Dr. Rowan's work (*Ibis*, 1931, 553), has drawn attention more particularly to the further case of those species which live wholly within the tropics but yet show an annual reproductive cycle and seasonal migrations. He suggests that in these various cases the periodicity must be "essentially different". It seems to us, however, easier to believe that the periodicity itself is essentially the same, but that it can become linked with different environmental factors according to circumstances.

It is clear that the field that Dr. Rowan has opened up is one of great interest, in which he and others should find further opportunity for fruitful work. We hope, among other things, that he may soon be able to extend his experiments to some trans-equatorial migrant, such as the Knot. We are also curious to learn just how far normal recrudescence of the gonads, say in the Junco, can be *retarded* in its due season, or to what extent intrinsic rhythm will then assert itself in spite of inappropriate conditions. A.L.T.

LETTER.

FULMARS AND POMATORRHINE SKUAS IN NORTH ATLANTIC.

To the Editors of BRITISH BIRDS.

SIRS,—While returning from the West Indies in April, 1932, we passed through a practically birdless area for nine days, during which time a few Petrels (sp. ?) and Shearwaters (sp. ?) only were observed. Then on the 24th in Lat. $51^{\circ}-04'$ N., Long. $14^{\circ}-18'$ W., at 8 a.m. two Fulmars (*Fulmarus glacialis*) were seen following the ship. By noon their numbers had increased to eleven, moreover others were constantly seen flying in all directions throughout the day. Previous to that day and on the day following none were about. On the same day a Pomatorrhine Skua (*Stercorarius pomarinus*) followed the ship from 2 p.m. till dark, sometimes flying close over the deck. For a short time two more Pomatorrhine Skuas followed. They occasionally swooped down to take *débris* and rested on the surface, but did not harass the three Kittiwakes (*Rissa t. tridactyla*), which were the only ones seen on this voyage.

On the 17th in $33^{\circ}-02'$ N., $60^{\circ}-12'$ W., a Pomatorrhine Skua was flying astern from 5 p.m. till dark.

In "An Ornithological Transect of the North Atlantic", Messrs. Nicholson recorded Fulmars as having been observed in Long. $11^{\circ}-21'$ W. in October only (*B.B.*, Vol. XXIV, p. 273), and suggested that further information on their movements would be of interest.

J. B. WATSON.

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THE GREAT CRESTED GREBE ENQUIRY, 1931, (PART I.)

BY

T. H. HARRISSON AND P. A. D. HOLLLOM.

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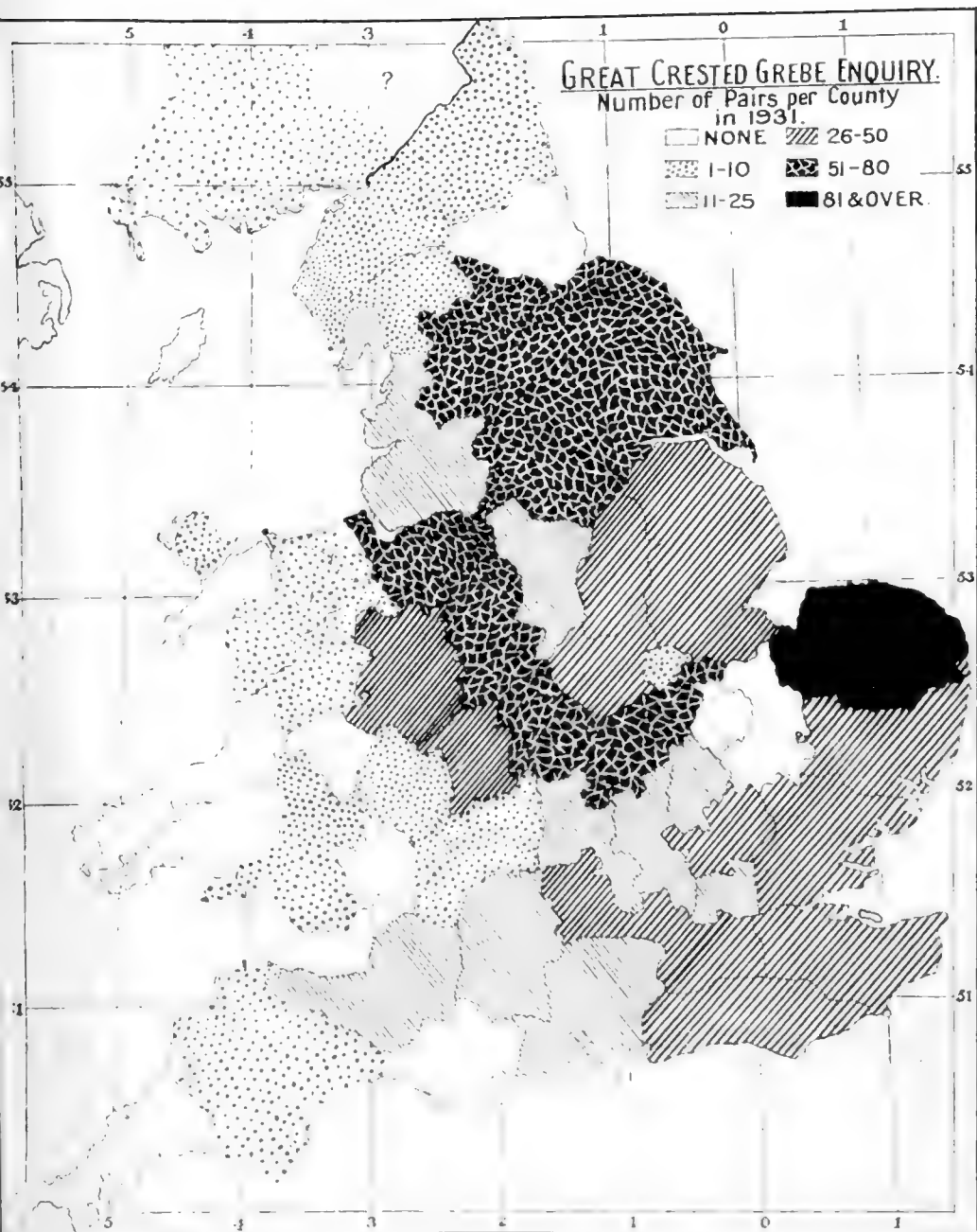
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I. INTRODUCTORY.*

THE Great Crested Grebe Enquiry, 1931, arose from an ecological study of aquatic birds in Surrey during 1930. The results of this work led us to follow up certain special lines of enquiry, especially the distribution and habits of the Great Crested Grebe (*Podiceps c. cristatus*). We chose this bird because it had increased to an extraordinary extent in the past fifty years, and the factors, stages, and innumerable repercussions involved in the increase of one species seemed to us a little known matter of great importance. The numbers in 1931 were to act as a standard for comparison with past and future status, having no intrinsic value in themselves. The bird was also conspicuous and unmistakable, with a limited habitat (fair sized lakes) which would greatly simplify a detailed study. For these reasons the Great Crested Grebe seemed ideal for our purpose.

The enquiry has been the work of the authors in co-operation throughout, and has been greatly facilitated by the invaluable advice and support of H. F. Witherby. With both of us the enquiry has been a hobby, and has had to be subordinated to our regular jobs. We can recommend this sort of hobby for those people who find life dull ; it has involved us in some five thousand letters from fifteen countries.

Scope of the Enquiry.—Our object in instituting this enquiry was to obtain a census of breeding Great Crested Grebes in England and Wales. We also hoped to cover Scotland as adequately as possible. In addition to ascertaining the numbers of pairs on all lakes in 1931 we desired to discover the approximate date on which each lake was first colonized, the numbers of pairs in other years, and the history of any lakes once inhabited but now deserted by Grebes. A schedule for this information was issued and circulated through *British Birds* ; the text of this schedule was printed *antea* XXIV., p. 253. A number of supplementary questions on eggs, nests, territory, non-breeding birds, mortality, migrations, food, etc., were added, as we considered these important in considering the success and the future of the species.

*In the organization of this enquiry most of the correspondence with naturalists was done by T.H.H., landowners and keepers by P.A.D.H. All lists of lakes, filing and sorting of data was done by P.A.D.H. The writing up of results and publications in connexion with the enquiry became mainly the affair of T.H.H., who is responsible for the text of this Report ; sections have been drafted by P.A.D.H., J. C. S. Ellis, C. H. Hartley and E. C. Rowberry, but these have always been revised and rewritten by T.H.H. This arrangement seemed necessary to ensure coherence and an even treatment throughout. Miss L. M. Bates typed the whole Report.

In order to assure the maximum of response, appeals for help were published in daily, evening and local newspapers, weekly and sporting papers, angling and scientific journals, and a special feature in *The Times*. The B.B.C. kindly broadcast an appeal at the beginning of the general news, while *British Birds*, *The Scottish Naturalist* and *The Naturalist* published special articles on our behalf. We wrote personally to every well-known naturalist and ornithologist, to many local observers, taxidermists, town clerks and clergy with lakes in their parishes; we circulated a great number of landowners with likely lakes on their property; and we did every other conceivable thing to make the enquiry a truly national one.

Success of the Enquiry.—As a result of all this publicity an enormous response was received, and something very near the maximum of returns was obtained. About one thousand lakes were visited and reported on during the summer by over one thousand three hundred observers.

Landowners in every part of the country gave invaluable assistance, often detailed and more accurate than that supplied by ornithologists. Keepers and agents were also very helpful, and not one case of erroneous identification was discovered. A mass of supplementary data was obtained, much of it valuable.

Our hopes, then, were fully justified. It has been possible not only to make a satisfactory census of the species in every county, but also to investigate the whole cycle of past history, increase phases and factors, recent decrease and increase, factors controlling distribution, future prospects, and so on. It has been possible to give figures for such widely separated points as the non-breeding population, young ratios, mortality rate, longevity and total annual food consumption. We have been able to compute and specify the relative importance of such matters as the various factors (covert, food, depth, etc.) in distribution, various species in competition, territorial instincts and colonial nesting. Throughout we have stressed the psychological developmental factors, whose influence is seldom appreciated by ornithologists and yet is vital to an understanding not only of the habits but also the distribution and success of the species. The significance of some of these influences is far wider than in its reference to one species. Always our remarks are based upon definite data obtained in the course of the enquiry. Several points remain undecided; these we have indicated in the text, in the hope that some person, favoured with more time than is at our

disposal, will take them up where we have had to leave off.

Limitations of the Enquiry.—No investigation is without its errors, and this one is no exception. We trust that the necessary additions will be sent to us, also the corrections. We shall publish these, together with information regarding changes since 1931, and any modifications in our statements that these may entail, some time in 1933. We have been somewhat handicapped in being able to give only our spare time to the enquiry and also by financial considerations. Indeed, we should have been unable to carry on at all had it not been for the support of Mr. Witherby and *British Birds*. As it is, the expenses we had to provide were so considerable that we were prevented from operating several schemes which we hoped to undertake in connexion with the enquiry. The only other serious limitation was one of our own making. We decided, as a matter of policy, that we would handle no dead Grebes during the course of the enquiry, for the bird is protected, and the success of this sort of work is partly dependent on the good-will of strong protectionists.

Acknowledgments.—It would be impossible to acknowledge here our indebtedness to the 1,300 persons whose names have reached us as helpers in this enquiry, as well as the unknown numbers whose data have been absorbed and summarized in the reports of other observers and county organizers. We have wherever possible acknowledged their help direct and would only repeat that we are deeply grateful for their help in making this enquiry a success. All those who have sent in data in any way relevant are named in the list of helpers for every county. It is, however, necessary that we should mention certain people who have devoted a great deal of their time to this enquiry.

We should like especially to acknowledge the help of J. C. S. Ellis, C. H. Hartley and E. C. Rowberry in writing up reports; Miss Calloway, Miss Janet Clark, W. R. D. Harrisson, Miss E. P. Leach and Miss Plummer in arranging data; L. A. Hawkins and W. H. Perrett in pursuing references; Miss L. M. Bates and Miss Lawson in clerical work. N. B. Kinnear and Dr. Percy Lowe have given us every facility for working up our data in the Natural History Museum, and Mr. Kinnear has given us much help in other directions. Invaluable as "flying squads", to fill any gap or save any crisis, have been W. B. Alexander, E. M. and B. D. Nicholson; of much help with criticism and advice C. S. Elton, Rev. F. C. R. Jourdain, D. L. Lack, Dr. T. G. Longstaff and E. M. Nicholson.

Without the decentralization of counties or large areas our work would have been far more complicated, and in this connexion we are very grateful to H. G. Alexander, Miss M. Barclay, H. M. S. Blair, H. B. Booth, A. W. Boyd, R. H. Brown, C. B. Chambers, Miss J. Clark, H. E. Forrest, W. E. Glegg, R. Hudson, H. G. Hurrell, G. C. S. Ingram, S. Lewis, F. A. Lowe, W. E. Mayes, H. M. Salmon, Sir T. H. Troubridge, B. W. Tucker, H. G. Wagstaff, Rev. M. W. Willson and Dr. W. P. Wilson. Several of these had to visit 30 or 40 lakes themselves. The co-operation of specialists in other groups simplified the writing up of results, and we must thank Major E. E. Austen (Mallophaga), Dr. J. E. Baylis (Endoparasites), Dr. W. E. Collinge (stomach contents), C. S. Elton (Mammals) and J. R. Norman (Fish) for help of this sort. For other special information we are indebted to E. St. George Betts, H. Boase, A. W. Boyd, T. A. Coward, B. H. Frere, R. M. Garnett, H. R. Jasper, C. Oldham, J. H. Owen and D. Seth-Smith. Important summaries of the status in foreign countries have been received from H. M. S. Blair, Fr. Haverschmidt, Sven Horstadius, F. Ludlow, Noël Mayaud and Conde E. Arrigoni degli Oddi.

We regret that we cannot mention here many others who have given a great deal of help, and we hope that they will appreciate the fact that this is not possible.

Literature.—The whole literature of the subject has been examined by T. H. H., with the help of L. A. Hawkins and W. H. Perrett, and with suggestions from Rev. F. C. R. Jourdain. In the main we have based our remarks on reports received in 1931, modified by past records where necessary; where no year is stated data refer to 1931.

II. THE CENSUS, 1931.

The Great Crested Grebe, *Podiceps cristatus cristatus* (Linn.), is characterized by its large size, pale bill, pure white under-parts, and chestnut and black tippet in summer; the male has wing 180-195 mm. and bill 47-55 mm., female wing 175-187 and bill 40-46. It is resident and spreading in Britain, but a rare visitor north of the Grampians, and unrecorded in the Outer Hebrides. It also breeds in Ireland. Abroad it nests in Europe from latitude 60° north to the Mediterranean and north Africa, and throughout northern and central Asia to China and Japan. Closely allied races occur in Africa south of the Sahara (*P. c. infuscatus*), Australia and New Zealand (*P. c. australis*).

ENGLAND AND WALES.*

As far as possible it was arranged that every water over four acres in England and Wales was visited by at least one observer during 1931. Below we analyse, as briefly as possible, the present numbers. So far as is known all possible sites in every county have been visited, though those unoccupied are not mentioned for reasons of space. In the later part of this report all the county data is collated, summarized, and general conclusions drawn from it; the county data must therefore be considered only as a preliminary part of the whole, the data upon which the more important results are based.

In considering these figures it will be as well to bear in mind that in 1860 the species was supposed to be in danger of extinction in Britain.

BEDFORDSHIRE. (E. M. Nicholson.)

Eight waters held 18 pairs :—

					Pairs in 1931.	Year of Colonization.
Battlesden Park	...	...	...	...	3	1902
Woburn Park—						
(1) Basin Pond	...	...	...	...	1	1902 +
(2) Cowhill Pond...	...	...	...	...	1	1902 +
(3) Little Drakelow	...	...	...	...	1	1902 <i>c.</i>
(4) Great Drakelow	...	...	...	...	1	1902 +
(5) Linden Pond	...	...	...	...	1	1924
Luton Hoo Park	...	...	...	...	9	1922
Southill Park...	...	...	...	...	1	1927-8

Not in 1931.

Old Warden Park	...	...	...	...	Bred in past.
Woburn Park, Leg of Mutton Pond	...	...	...	...	1 pr. ; not since 1926.
Tingrith Manor	..	...	...	...	1 pr. ; 1899 ; irregularly since 1918; bred 1930.

INFORMANTS.—*The Duchess of Bedford*, W. A. Fellows, W. J. Fleet, H. W. Finlinson, *T.H.H.*, S. Hubbard, Lt.-Col. Isit, M. F. M. Meiklejohn, E. M. Nicholson, B. D. Nicholson, F. G. R. Soper, S. H. Whitbread.

*For years of colonization, where any definite date is given, the lake was colonized in that year. If a + sign follows the date it is probable it was colonized before the date given, which is the earliest known. If a *c* follows the date, the date is an approximate one; the lake was colonized about that time. X indicates a water whose name it is desired shall not be published. *Ancient* equals probably prior to 1850; *many years* equals probably prior to 1900; *recent* is probably since 1920. In the lists of informants those in *italic* type visited a considerable number of lakes. The name of the person responsible for decentralizing each county is placed at the head in brackets.

BERKSHIRE. (B. W. Tucker.)

Sixteen waters held 37 pairs :—

	Pairs in 1931.	Year of Colonization.
Aldermaston Park	1	1910 +
Ascot Place	2	1921 +
Bearwood Lake	3	1885 c.
Buckland House	1	1929
Buscot Lake	4	1920 c.
Buscot House, Reservoir	1	1922 c.
Buscot House, little lake	1	1931
Faringdon Park	1	1920 c.
Foliejon Park	1	1929
Oakfield	1	1920 c.
Queensmere (Silverstock)	1	1924 c.
Silwood Park... ..	1	1931
Sunninghill Park Great Pond	1	Some years.
Virginia Water	10	1900 +
Whiteknights Lake	1	1885 c.
Windsor Park, Great Meadow Pond	7	1895 c.

Not in 1931.

Aldermaston, Decoy Pond	1 pr. c. 1920-1930.
Bulmershe	1-2 prs. in former years.
Wokingham, Heath Lake	1 pr. probably 1927 and other years.
Maiden Erlegh	1 pr. c. 1900 and until recently ; erratic.

INFORMANTS.—*W. B. Alexander*, *W. Crosland*, *Col. Donovan*, *A. W. Gillett*, *T. H. H.*, *J. L. Hawkins*, *P. A. D. H.*, *E. M. Nicholson*, *H. Nicholson*, *Capt. E. Noble*, *M. E. W. North*, *H. J. R. Pease*, *F. E. Shrapnell-Smith*, *Rev. G. Gore-Skipwith*, *H. N. Southern*, *B. W. Tucker* and the *Oxford Ornithological Society*, *C. E. Wigg*, *Capt. N. K. Worthington*.

BUCKINGHAMSHIRE. (B. W. Tucker.)

Ten waters held 13 pairs :—

	Pairs in 1931.	Year of Colonization.
Blackpit, Lillingstone Dayrell	1	1929 +
Chess River, Latimer House—		
(1) Great Water	1 }	
(2) Lower Water	1 }	1929 +
Claydon Park, Lower Pond	1	1924
Colnbrook Bypass, gravel pit	2	1928
Shardeloes Park	1	1927
Stowe Park, large lake	1	1929 +
Weston Turville Reservoir	3	1895 c.
Wotton Park (two lakes)	2	1925 +

Not in 1931.

Claydon Park, middle pond	1 pr. attempted 1924.
(Thames River, Marlow	1 pr. and 2 young, Oct., 1926.)

INFORMANTS.—*W. B. Alexander*, *J. M. Ashton*, *C. L. Colenette*, *Lt.-Col. A. M. H. Forbes*, *T. H. H.*, *J. K. Henderson*, *D. L. Lack*, *Miss C. E. Longfield*, *C. Oldham*, *T. R. H. Owen*, *H. J. R. Pease*, *Hon. H. D. G. Prittie*, *E. C. Rowberry*, *B. W. Tucker* and the *Oxford Ornithological Society*.

CAMBRIDGESHIRE. (T.H.H.)

No breeding records are known for the county, though the species was present centuries ago, when the fens were alive with many now vanished wild fowl. It has been found common in geological remains with Pelicans, Garganey, Bittern and Wild Swan in the great fenlands of Cambridge.

Croxton Park has at present too little cover and an unsuitable position. The ballast pits at the Cambridge Sewage Farm and the Barton Road Pond, on the outskirts of Cambridge, are both suitable, though rather small; single birds were present on these during June and July, 1930 and 1931.* Irregular wanderers have occurred at Ely and Bedford River Washes (in winter).

INFORMANTS.—F. S. Chapman, A. H. Evans, T.H.H., Rev. F. F. Herbert, D. L. Lack, F. Ladds, M. E. W. North, A. W. Rymer-Roberts, P. Scott, W. H. Thompson.

CHESHIRE. (A. W. Boyd.)

Twenty-seven waters held 78 pairs :—

					Pairs in 1931.	Year of Colonization.
Baddiley Mere	...	...	...	...	4	1919
Barmere	...	...	...	...	2	Ancient
Billinge Green	...	...	...	...	1	1902 +
Bosely Reservoir	...	...	...	...	1	1897
Cholmondeley Castle	...	...	...	...	2	Ancient
Combermere	...	...	...	...	8	Ancient
Crewe Hall Pool	...	...	...	...	2	
Doddington Park	...	...	...	...	7	
Little Budworth Pool	...	...	...	...	1	Ancient
Marbury Mere, Great Butterworth	...	...	...	...	1	1897 +
Marbury Mere, S. Cheshire	...	...	...	...	6	Ancient
Mere Mere	...	...	...	...	1	1906 +
North Rode	...	...	...	...	1	
Oakmere	...	...	...	...	1	1893 +
Oulton Pool	...	...	...	...	4	Ancient
Pettypool	...	...	...	...	1	Ancient
Radnor Mere	...	...	...	...	2	1901 +
Redesmere	...	...	...	...	2	1899 +
Rostherne Mere	...	...	...	...	16	Ancient
Sutton Reservoir	...	...	...	...	1	1894 +
Tabley Mere	...	...	...	...	2	1901 +
Tatton Mere	...	...	...	...	7	1901 +
Thornycroft	...	...	...	...	1	1927
Tilstone Lodge Pool	...	...	...	...	1	Ancient
Walton Reservoir	...	...	...	...	1	1893 +
Wilton Flashes	...	...	...	...	1	1924
Winsford Flashes	...	...	...	...	1	Ancient
<i>Not in 1931.</i>						
Arley Pool	...	...	...	...	Has nested.	
Astle Pool	...	...	...	...	Nested 1912.	
Capesthorpe	...	...	...	...	Has nested; not very suitable.	
Hatchmere	...	...	...	...	Pair arrived 1931; but disturbed by campers.	
Knutsford Reservoir	...	...	...	...	Has nested.	
Lawton Hall	...	...	...	...	Nested 1917-1927; now too much boating on mere.	

*A pair bred on the former for the first time in 1932.

CHESHIRE.—*continued.*

Lymm Dam	Nested 1901 and subsequently driven away by boating.
Norbury Booths	1 pr. 1901.
Pickmere	Nested 1884 and subsequently ; now crowded with boats.
Quoisley Meres	Has nested ; several observed 1931, but did not stay.
Rhodes Heath	Has nested ; driven away by boating.
Vale Royal	1 pr. in past.

INFORMANTS.—N. Abbot, A. W. Boyd, J. J. Cash, G. H. Clegg, E. Cohen, T. A. Coward, Sir H. Crossley, Bart, J. M. Etches, R. M. Garnett, A. G. Haworth, D. J. Hemming, Miss A. M. Henderson, E. W. Hendy, G. Jennison, C. S. Maunée, H. Ormesher, F. H. Rousnall, J. P. Whipp.

CORNWALL. (T.H.H.)

Not recorded as nesting. Moreover, only of rare occurrence in winter and almost unknown at the Scillies. Very few possible nesting localities. Marazion Marsh and Hoc Pool (near Helston) are the only waters at all suitable in west Cornwall. It is possible that the county may be colonized within the next few years if the species becomes more firmly established in Devon.

INFORMANTS.—Seton Gordon, T.H.H., G. H. Harvey, Col. B. H. Ryves, Major A. A. Dorrien-Smith, Dr. R. P. Thomas, F. E. Trelawny, W. Walmesley White, T. J. Willcocks.

CUMBERLAND. (R. H. Brown.)

Two waters held 2 to 3 pairs :—

	Pairs in 1931.	Year of Colonization.
Over Tarn	1 or 2	1931 +
Thurstonfield Lough	1	1928

INFORMANTS.—A. Astley, E. Blezard, R. H. Brown, Miss M. Garnett, T.H.H., L. E. Hope, M. E. W. North, late F. C. Symonds.

DERBYSHIRE. (C. B. Chambers.)

Fifteen waters held 20 pairs :—

	Pairs in 1931.	Year of Colonization.
Butterley Reservoir	3	
Codnor Park Reservoir	1	1902 +
Hardwick Park	1	1901 +
Locko Park	1	1920 +
Long Eaton, Ballast Pond... ..	1	1930 ?
Loscoe Dam	1	1928
Melbourne Lake	3	" Some years "
Pebley Pond	1	1920
Renishaw Park	1	1926
Shipley Park—		
(1) Mapperley	1	1890-91
(2) Old Lake	2	1901
(3) Osbornes	1	1902 c.
Stubben Court	1	1903 +
Sudbury Hall	1	1898 +

DERBYSHIRE.—*continued.*

				Pairs in 1931.	Year of Colonization.
Trent Lake, Long Eaton	...	...	...	1	1926 +
<i>Not in 1931.</i>					
Alton Manor ...	...	...	...	1 pr. 1925.	
Barton under Needwood, Ballast Pit	...	...	...	1 pr. 1914-1925.	
Brixton Gardens	...	...	...	1 pr. 1915.	
Colne Abbey	...	...	...	1 pr. 1910-1914.	
Coombs Reservoir	...	...	...	1-2 prs., 1912-20 (attempts since including 1930).	
Drakelow	...	...	...	1 pr. 1924.	
Kedleston	...	...	...	1 pr. 1926-1928.	
Osmaston Park	...	...	...	1 pr. 1904-1928 (2 prs. 1907).	
Sutton Scarsdale	...	...	...	1 pr. c. 1915 (nest destroyed).	
Yeldersley	...	...	...	1 pr. 1907.	

INFORMANTS.—J. L. Auden, G. H. Anson, H. B. Booth, W. B. Bunting, Col. Hurnble Burkitt, C. B. Chambers, E. Cohen, The Duke of Devonshire, G. G. Hanbury, Miss A. Hibbert-Ware, W. Hufetin, Miss C. Hull, *Rev. F. C. R. Jourdain*, Locker Lampson, Capt. Drury-Lowe, Capt. D. S. Mackay, Capt. W. K. Marshall, Lt.-Col. and Mrs. G. Mosley, B. Murray, Keeper Pegg, J. Potter, Viscount Scarsdale, Mr. Shayler, W. Shipton, Lord Vernon, Keeper Wain, H. A. Wallace, Sir Ian P. A. Walker, Brigadier-General Walthall, A. Whitaker, Capt. and Mrs. Fitzherbert-Wright, J. J. Baldwin Young.

DEVONSHIRE. (H. G. Hurrell.)

Two waters held 2 pairs :—

					Pairs in 1931.	Year of Colonization.
Slapton Ley ...	...	...	...	...	1	1930
Westbury Pool	...	...	...	...	1	1931
<i>Not in 1931.</i>						
Bude Reservoir	...	...	...	...	1 pr. (3 young) in 1930.	

INFORMANTS.—J. H. Comyns, Captain Corlett, V. C. Wynne Edwards, F. W. Gade, T.H.H., H. G. Hurrell, C. Oldham, W. Walmesley White, Dr. Ward.

DORSETSHIRE.* (T.H.H.)

There are no breeding records.

A pair was present in one locality during 1930, but apparently did not breed. None were observed in 1931.

Common at sea in winter and birds have been observed at Aichel Park. A number of fair-sized lakes, such as Burton Mere, Little Sea and Radipole Lake, are near the sea and very shallow. Stinsford Pond has plenty of cover; Lodmoor is scarcely suitable owing to its marshy nature. All these are on chalk soil.

INFORMANTS.—W. J. Ashford, J. Gill, A. Harding, H. P. Hanham, T.H.H., P.A.D.H., Dr. T. G. Longstaff, T. R. H. Owen.

DURHAM. (H. M. S. Blair.)

Not known to have bred, despite many large waters, such as West Hartlepool, Tees Valley and Saltburn Reservoirs, Baldersdale, etc., mostly rather exposed.

INFORMANTS.—W. B. Alexander, H. M. S. Blair, Miss H. Trenchman.

*As we go to press W. J. Ashford sends us the first record of breeding for the county—May 14th, 1932, a nest with four eggs.

ESSEX. (W. E. Glegg.)

Nineteen waters held 33 pairs :—

				Pairs in 1931.	Year of Colonization.
Braxted Park	...	...	...	1	1912 +
Dagenham Breach	...	...	...	1	1906
Gosfield Park	...	...	...	4	Before 1909
Great Hallingbury Park	...	...	...	1	After 1923, 1927 certain.
Lea Valley Reservoirs* (13 waters in 4 groups)	c.	24			1904
Navestock Park	...	...	...	1	1906 c.
Thorndon Park	...	...	...	1	1928
Not in 1931.					
Dudbrook Lake	...	...	...	1 pr.	1906.
Holfield Grange	...	...	...	1 pr.	1916.
Near Walton	...	...	...	1 pr.	1888.
Weald Park	...	...	...	1 pr.	1906, 1911, 1912.
Wormingford Decoy	...	...	...	1 pr.	1927.
Vange Reservoir	...	...	...	1 pr.	1923.

INFORMANTS.—C. E. Baker, Miss J. A. J. Barclay, P. W. Bennett, W. W. Boulton, A. Murray Burton, J. W. Campbell, G. S. Candale, J. René Courtauld, C. L. Collenette, R. E. J. Edwards, W. E. Glegg, Mrs. R. Hall, J. P. Hardiman, P. Hurlash, Mrs. S. R. Lowe, P. W. Meeson, E. T. Nicholson, J. H. Owen, Mrs. A. Penn, R. W. Pethen, A. Piper, C. J. Round, A. F. Smith, Col. R. Sparrow, C. J. Tower, E. M. Tufnell, C. Weekes, D. S. Wilson, W. A. Wright.

GLOUCESTER. (T.H.H.)

One water held 1 pair :—

				Pairs in 1931.	Year of Colonization.
Frampton-on-Severn Gravel Pit†	...	...	...	1	1927 (possibly 1925)
Not in 1931.					
Dowdeswell Reservoir	...	...	...	Attempted annually since	1914.

INFORMANTS.—W. B. Alexander, Hon. R. H. Bathurst, The Duke of Beaufort, Brig.-General R. G. Burton, Miss S. M. Butlin, Mrs. Clifford, Sir C. Codrington, The Earl of Ducie, M. Elmes, F. Felton, H. A. Gilbert, Mrs. E. R. Gillespy, P.A.D.H., W. L. Mellersh, F. H. Norton, Lt.-Col. G. H. Ricardo, Sir J. H. Seabrooke, Rev. G. M. Sheldon, R. H. Smith, Rev. W. Sole, O. H. Wild.

HAMPSHIRE. (Sir Thomas Troubridge and P.A.D.H.)

Thirteen waters held 24 pairs :—

				Pairs in 1931.	Year of Colonization.
Alresford Pond	...	...	...	3	1929 +
Awbridge Danes	...	...	...	1	1931
Bramshill	...	...	...	1	Yearly
Dogmersfield, Tundry Lake	...	...	...	4	1891 c.
Dogmersfield, Broad Oak	...	...	...	2	1891 c.
Ewhurst Lake	...	...	...	1	1921 c.
Fleet Pond	...	...	...	4	1895 c.

*It has not been considered necessary to deal with each of the Lea Valley Reservoirs separately.

† Pit since drained.

HAMPSHIRE.—*continued.*

				Pairs in 1931	Year of Colonization.
Hawley Pond	...	...	...	2	1928 +
Highclere, Dunsmere	...	...	...	1	Yearly
Highclere, Milford Lake	...	...	...	1	Yearly
Kentford, Lower Lake	...	...	...	1	1931
Sowley Pond	...	...	...	2	1921
Winnall Moors	...	...	...	1	1930
<i>Not in 1931.</i>					
Alice Holt Wood	...	...	...	2 prs. for many years, not in 1931.	
Paultons Park	...	...	...	1 pr. in 1911 and 1912.	

INFORMANTS.—W. B. Alexander, A. Arnold, *Miss E. Arnold*, T. T. Barton, H. Beeston, *Miss J. Clark*, Capt. D. Cope, J. Denyer, W. A. Durnford, Rev. W. O. W. Edwards, Sir Sam Fay, W. P. Fuller, Mrs. A. E. Harrington, *T.H.H.*, W. R. D. Harrisson, R. W. Hodgson, *P.A.D.H.*, Rev. F. C. R. Jourdain, J. Spedan Lewis, Dr. T. G. Longstaff, G. M. Mathews, Lady St. John Mildmay, P. W. Munn, M. E. W. North, Major C. Paddon, J. S. Pearson, D. L. Penrose, G. W. Pierce, G. P. Plowman, Major Portal, S. D. Procter, R. Renwick, B. J. Ringrose, J. S. Sabine, G. Schwerdt, Major R. C. H. Sloane Stanley, Col. R. Sparrow, C. R. Stonor, J. Stowe, *Sir Thomas Troubridge, Bart.*, N. Vyvyan, F. J. Waydelin, L. R. Waud, The Duke of Wellington, J. A. C. Whitaker, W. J. Whitaker, M. W. Wickham-Boynton, *Miss E. M. Williams*, Rev. M. W. Willson.

HEREFORDSHIRE. (P.A.D.H.)

Two waters held 3 pairs :—

				Pairs in 1931.	Year of Colonization.
Eywood, Flintsham Pool	...	...	...	1	1900 c.
Shobdon Court	...	...	...	2	Many years
<i>Not in 1931.</i>					
Berrington Pool	...	...	...	1 pr. c. 1912-1929.	
Eastnor Castle	...	...	...	Erratic.	
Eywood Lake	...	...	...	1 pr. c. 1915 ?	

Erratic in all waters in this county.

INFORMANTS.—Dr. Adams, W. Blake, R. H. Challand, Sir Geoffrey Cornwall, H. A. Gilbert, *Miss Gwyer*, Capt. C. S. N. Bateman-Hanbury, Rev. R. J. B. Lewis, Mrs. Longueville, Col. H. E. P. Pateshall, Major S. Pershouse, Major A. R. Rowden, Rear-Admiral A. L. O. Forbes-Sempill, Norman H. Todd, *S. Cornish-Watkins*.

HERTFORDSHIRE. (E. M. Nicholson.)

Ten waters held 34 to 35 pairs :—

				Pairs in 1931.	Year of Colonization.
Bonningtons, Ware	...	...	...	1	1913-14
Brocket Hall	...	...	...	2	1930 +
Cheshunt Reservoir	...	...	...	2	1906 c.
Elstree Reservoir	...	...	...	3	1906
Gilston Park	...	...	...	1	1927

HERTFORDSHIRE.—*continued.*

					Pairs in 1931	Year of Colonization.
Tring Reservoirs :—						
(a) Marsworth	...	...	...	...	6	1867
(b) Startops End...	...	...	...	...	(1)	
(c) Tringford	...	...	...	...	5	
(d) Wilstone	...	...	...	...	13	
Wormley Bury	...	...	...	...	1	1925-26

Not in 1931.

Money Hill, Rickmansworth ... 1 pr. 1927, probably 1929.

There were 34 breeding pairs on ten lakes in Hertfordshire during 1931, of which 25 were at Tring (estimates made by Miss R. Blezard, C. Oldham and T.H.H.), though it is not at all certain that the Startops End pair nested—there being as many as 34 non-breeders on this water in late June.

The history of the Grebe in Hertfordshire is one of the most interesting of any county. The Tring Reservoirs have long been an important breeding station, and since the first record of breeding in 1867, Hartert, Jourdain and Lord Rothschild made rough counts of nests in various years. There were not less than 75 nests in 1884, 45 in 1885 and 43 in 1886. In 1918 Keeper Street estimated about 30 pairs, and C. Oldham considers 25-30 pairs about standard for the last 25 years. There has thus been a large decrease at Tring since 1884, the great increase and spread period which started the wave of Grebe colonization, but Grebes may have been at a more than optimum density in 1884, with resultant spread (and apparent decrease at Tring) in later years.

INFORMANTS.—K. R. Ashby, W. Bickerton, Miss R. Blezard, Miss A. Bonus, Mrs. Bowlby, R. Buxton, Lord Desborough, A. H. Foster, R. J. Griffiths, G. Hale, T.H.H., W. R. D. Harrisson, E. Hobday, A. K. James, Bertram Lloyd, H. A. Littlejohn, A. H. Meiklejohn, E. M. and B. D. Nicholson, G. H. R. Norris, C. Oldham, Major A. Pam, L. Parmenter, Lord Rothschild, Keeper Street, late E. P. Thompson, E. H. Warmington, C. Dexter Watts, P. White.

HUNTINGDONSHIRE. (T.H.H.)

None bred in 1931, but there are two deserted sites.

Not in 1931.

Bury Fen, Bluntisham	...	...	...	...	1 pr. 1924.
Kimbolton Fish Pond	...	...	...	...	Bred at least once.

INFORMANTS.—T.H.H., Rev. F. F. Herbert, A. E. Lees, B. Lowerdson, Rev. E. Peake, L. S. Maunée, Rev. L. Powys Maurice, C. F. Tebbutt, F. Waters, C. W. Whympier.

KENT. (P.A.D.H.)

Ten waters held about 29 pairs :—

					Pairs in 1931.	Year of Colonization.
Bayham Abbey	...	...	...	...	1	1919
Bedgebury Park	...	...	...	...	1	1916 c.
Dunorlan	...	...	...	...	1	1930
Eastwell Park	...	...	...	...	c. 4	1919 +
Hever Castle	...	...	...	...	c. 6	1910
Horsmonden Furnace Pond...	...	...	...	...	3	1919 +
Hothfield	...	...	...	...	1	1925 c.
Leeds Castle	...	...	...	...	1	1911 +

KENT.—*continued.*

					Pairs in 1931	Year of Colonization.
Mersham Hatch	...	...	...	...	1	1924 <i>c.</i>
Mote	...	...	...	...	10	1920
<i>Not in 1931.</i>						
Cowden Furnace Pond	...	...	...	...	1 pr.	1906.
Danson Park	...	...	...	...	1 pr.	1919-1928.
Dartford Powder Mills	...	...	...	...	1 pr.	1925.
Romney Marsh	...	...	...	...	1 pr.	1923.

INFORMANTS.—Major A. A. Astor, F. K. Bromley, C. F. Collins, F. R. Connor, H. B. Couchman, O. L. d'Avigdon Goldsmid, R. J. de Upaugh, H. S. Eeles, *Rev. J. R. Hale*, Lord Hollenden, *P.A.D.H.*, Miss D. F. Hunter, E. W. Hussey, C. Ingram, H. B. Knight, F. H. Lancum, Mrs. M. Locket, G. Mannering, E. G. B. Meade-Waldo, D. H. Meares, H. Prentice, Lt.-Col. B. Ready, J. Smith, Earl Stanhope, *C. T. Stedman*, Miss A. V. Stone, N. F. Ticehurst, *Capt. G. E. Took*, Miss K. Y. Varndell, A. W. Warmesley, R. G. Williams, R. N. Winnall.

LANCASHIRE. (F. A. Lowe).

Nine waters held 14 pairs :—

					Pairs in 1931.	Year of Colonization.
Agecroft, Manchester	...	...	...	...	2	1920
Blackburn Corporation Park	...	...	...	...	1	1931
Blelham Tarn	...	...	...	...	2	1916
Bolton	...	...	...	...	1	1930
Doffcocker Lodge	...	...	...	...	1	1929
Esthwaite Tarn*	...	...	...	...	3	1901 +
Flash near Leigh	...	...	...	...	1	1931
Knowsley Park	...	...	...	...	2	Ancient
Warrington, small reservoir near	...	...	...	...	1	1929

Not in 1931.

Walton-le-Dale 1 pr. 1929 (shot) and 1930.

INFORMANTS.—W. B. Alexander, A. Astley, T. Baddeley, Miss E. G. Bickersteth, W. G. Boothroyd, A. W. Boyd, R. H. Brown, Miss Clark, Stanley Crook, the late C. J. D'Aeth, C. S. Elton, M. Geraldine Downton, Miss M. Garnett, O. Garside, E. Hardy, A. G. Haworth, N. C. F. Hellicar, W. E. Higham, J. H. Holden, L. E. Hope, D. F. Jopson, *F. A. Lowe*, Major M. H. Milner, C. Oldham, J. F. Peters, J. A. Pownall, *H. W. Robinson*, P. N. Stone, P. C. Varley, G. Wrigley.

LEICESTERSHIRE. (W. E. Mayes.)

Twelve waters held 34 pairs :—

					Pairs in 1931.	Year of Colonization.
Belvoir Fish Ponds	...	...	...	...	4	?
Blackbrook Reservoir, Loughborough	...	...	...	...	2	last century
Cropston Reservoir	...	...	...	...	3	1879
Grobby Pool	...	...	...	...	3	many years
Knipton Reservoir, Belvoir	...	...	...	...	5	1886
Moir Reservoir	...	...	...	...	2	many years
Saddington Reservoir	...	...	...	...	2	1874
Stapleford Park	...	...	...	...	4	1890 +
Staunton Harold	...	...	...	...	1	1900
Swithland Reservoir	...	...	...	...	4	many years
Thornton Reservoir	...	...	...	...	2	1883
Willesley Lake	...	...	...	...	2	1900 +

*No less than twenty-one observers reported on Esthwaite in 1931 !

INFORMANTS.—W. P. Allen, Dr. J. V. C. Braithwaite, J. B. Cartwright, V. C. Wynne-Edwards, *Countess Ferrers*, John German, Lt.-Col. J. Gretton, Mrs. Grey, William Hartnell, the late Miss C. M. Hopkirk, *Horace R. Jasper*, G. D. Jordan, Rev. F. C. R. Jourdain, Miss G. Lows, Major J. M. Logan, Capt. W. K. Marshall, *W. E. Mayes*, F. V. Millington, W. Moss, H. W. Southern, Miss F. K. Staunton, Miss G. H. M. M. Vincent, H. J. Wain, N. T. Walford.

LINCOLNSHIRE. (T.H.H.)

Thirteen waters held 27 pairs :—

					Pairs in 1931.	Year of Colonization.
Culverthorpe ...	...	...	...	...	2	1912
Deeping St. James, Ballast Pit	...	...	...	...	1	(?) old
Denton Reservoir	...	...	...	...	2	1875
Fillingham	...	...	...	...	3	1913 +
Grinsthorpe	...	...	...	...	2	1880 +
Harlaxton	...	...	...	...	1	1930 + ?
Lindholm Lake	...	...	...	...	1	1927 +
L.M.S. Pit, Lincoln	...	...	...	...	1	1916 +
L.N.E.R. Pit, Lincoln	...	...	...	...	1	1916 +
Norton Place	...	...	...	...	1	1920
Revesby Reservoir	...	...	...	...	10	1912
Sleaford Ballast Pit...	...	...	...	...	1	1905
Syston Park	...	...	...	...	1	1907 +
Not in 1931.						
Belton House	...	...	...	1 pr.	until lake drained ; have not returned.	
Hartsholme	...	...	...	1 pr.	1916-1930.	
Riseholme	...	...	...	1 pr.	1925-30.	

INFORMANTS.—Brig.-Gen. R. L. Adlercron, *W. B. Alexander*, Rev. H. F. Allison, The Earl of Ancaster, Rev. F. L. Blathwayt, H. B. Booth, T. F. Brewster, C. B. Chambers, G. Dixon, H. Dodds, Hon. Mountjoy J. C. W. Fane, G. C. Gibbons, A. G. Giles, *T.H.H.*, Major J. M. Hoult, Col. G. R. R. Jacques, C. Jessop, Rev. D. M. Lang, The Earl of Liverpool, H. V. Livermore, Lord Monson, F. O. Neal, R. N. Sutton Nelthorpe, C. A. Pelham, *Major W. H. Rawnsley*, J. S. Reeve, C. Silcock, Col. R. Sparrow, Major Sir John Thorold, Bart., T. A. Trintin, W. H. Venison, N. T. Walford, H. W. Walker, Sir Charles Welby, Bart., Lord Yarborough.

MIDDLESEX. (London Nat. Hist. Soc.)

Six waters held 15 pairs :—

					Pairs in 1931.	Year of Colonization.
Feltham Gravel Pit ...	...	...	...	...	4	1928
Gunnelsbury Park	...	...	...	...	1	1927 +
Osterley Park	...	...	...	...	2	1896 +
Ruislip Reservoir	...	...	...	...	4	1908
Stoke Newington Reservoirs	...	...	...	...	3	1912
Trent Park, Cockfosters	...	...	...	...	1	1921 c.
Not in 1931.						
Grovelands, Winchmore Hill	...	...	...	1907 onwards,	until boating.	
Staines Reservoirs	...	...	...	1 pr.	in 1930.	
Teddington Pond	...	...	...	1 pr.	1920-1930.	
Wood Green Reservoirs	...	...	...	2 prs.	in 1929.	

INFORMANTS.—Major E. E. Austen, S. Austin, Col. Bowles, C. L. Collenette, L. M. Emberson, The Duke of Grafton, *R. J. Griffiths*, P. J. Hanson, J. P. Hardiman, T.H.H. and W. R. D. Harrison, Mrs. A. Hibbert-Ware, *P.A.D.H.*, D. L. Lack, Dr. H. L. Lack, Miss Latimer, Henry Little, Dr. G. Carmichael Low, A. Holte Macpherson, C. H. Meares, E. M. Nicholson, L. Parmenter, R. Patterson, H. Parkins, R. W. Pethen, S. G. Poock, A. M. Richardson, *E. C. Rowberry*, F. R. P. Stringer, W. Sneyd-Taylor, W. B. Thomas, Miss D. Venour, E. H. Warmington, Mrs. Boyd-Watt, *C. Weeks*, Major Williams, J. Sladen Wing.

MONMOUTH. (P.A.D.H.)

No Grebes have ever been known to nest in Monmouth, and the species is rarely observed. There are one or two apparently suitable waters with plenty of cover but these have never been occupied, and Dr. Tatham believes that the species of rush growing there is unsuitable for Grebes nesting. Swans, Coots, Moorhens and Dabchick, however, nest quite commonly.

NORFOLK. (Miss M. Barclay.)

Fifty-three waters held about 202 pairs in 1931. Owing to the large number of occupied sites and the fact that these fall naturally in three groups, a slight modification of the usual form has been used in dealing with this county.

					Pairs in 1931.	Year of Colonization.
Blickling Lake	...	...	...	...	5	1927
Elmham Lake	...	...	...	...	1	1928 +
Felbrigg Park	...	...	...	...	1	1924 +
Gunton :—						
(1) Great Water	...	...	...	...	3 }	1874
(2) Mill Pond	...	...	...	...	1 }	
Havering Pond	...	...	...	...	1	many years
Holkham Lake	...	...	...	...	12	1917
Melton Constable	...	...	...	...	1	many years
Narford Lake	...	...	...	...	4	many years
Raynham Lake	...	...	...	...	1	many years
Selbrigg Pond	...	...	...	...	1	1928
Stradsett Lake	...	...	...	...	2	1923
Sturton Water, Cawston	...	...	...	...	1	1931
Wolterton Lake	...	...	...	...	1	many years
The Meres (S.W. Norfolk) :—						
Didlington Hall	...	...	...	...	4	
Fowlmere	...	...	...	...	1	1926
Quidenham Mere	...	...	...	...	1	many years
Scoulton Mere	...	...	...	...	5	1926
Seamere, Hingham	...	...	...	...	8	many years
Shadwell	...	...	...	...	2	1884 +
Stanford Water	...	...	...	...	4	many years
Thompson Water	...	...	...	...	1	many years
Tofts Mere	...	...	...	...	2	
West Wretham Park :—						
(1) Hill Mere	...	...	...	...	2	1910
(2) Mickle Mere	...	...	...	...	5	1910
(3) Rush Mere	...	...	...	...	2	1914

The Broads.*—(All these are more or less ancient sites.) Alderfen (Neatishead), 1; Barton, 4; Burnt Fen (Horning) 4; Cromes 1; Filby 9; Hickling 5; Heigham 2; Horsey 3; Hoveton Great Broad 6; and Little Broad 7; Hudsons Bay (Hoveton) 1; Martham 2; Oby (River Bure) 1; Ormesby 12; Ranworth Inner 22, and Outer 4; Rockland 2; Rollesby 20; Salhouse 3; Snipe Water 1; South Walsham Inner 5, and Outer 2; Stalham 1; Sutton 1; Whitesea 2; Woodbastwick (Decoy Broad) 3; Wroxham 6.

Not in 1931.

Bluestone Wood, Heyden Estate ...	... 1 pr. 1924 and previously.
Kimberley ... ..	... Has nested (Riviere).
Langmere ... ..	... 1927
Sandringham Deer Park ...	... 1 pr. 1926.
Sennowe Park ... ..	... 1 pr. 1928-1930.
Woodbastwick Old Hall Reach (River Bure) ... ..	... Has bred recently.

INFORMANTS.—Lord Albemarle, W. B. Alexander, W. P. Allen, G. Annison, Capt. Armitage, W. N. Arnold, *Miss M. Barclay*, P. H. Ball, T. T. Barton, Lt.-Col. I. B. H. Benn, C. W. Benson, H. C. Boardman, D. W. Buckle, Col. E. A. Bulwer, H. P. O. Cleave, W. F. N. Clowes, T. A. Cook, Miss J. M. Ferrier, *B. H. T. Frere*, F. S. George, F. Geraldine-Downton, *F. Gordon-George*, R. J. Griffiths, Miss C. E. Gurney, L. W. Harrison, L. Hayward, Miss J. Hopkins, J. H. Jackson, C. W. James, R. W. Ketton-Cremer, *D. L. Lack*, *Dr. H. L. Lack*, Lord Leicester, L. R. W. Loyd, A. McEwen, W. Meech, M. F. M. Meiklejohn, M. E. W. North, A. H. Patterson, J. A. Parsons, C. T. M. Plowright, A. W. P. Robertson, V. H. Scratchley, E. C. Sherwood, *C. Silcock*, G. Skoyles, Col. H. F. Smith, Col. Sparrow, Dowager Lady Suffield, J. F. Thomas, Lt.-Col. G. E. Todd, A. E. W. Tower, J. Vincent, W. R. O. Woodward, F. Zimmerman.

NORTHAMPTONSHIRE. (T.H.H.)

The 1931 position of Grebes in Northamptonshire was remarkably interesting.

It was a very bad year for breeding, there being a big decrease on the reservoirs and elsewhere, with many unsuccessful attempts to nest.

Twenty-three waters held 67 pairs:—

	Pairs in 1931.	Year of Colonization.
Ashby St. Ledgers:—		
Armill's Gate	3 }	1925 c.
Manor House	1 }	
Blatherwycke... ..	2	1900 +
Burghley House	4	1920 +
Canon's Ashby:—		
(1) Upper Lake	1	
(2) Lower Lake	1	
Cransley Reservoir	4	1925
Daventry—large reservoir ...	8	years
Daventry—small reservoir ...	3	years
Deenethorpe	1	recent (?)
Fawsley Park	2	1914
Naseby Reservoir	3	(1922 +)
Overstone Park	1	(1928)

*The Broads count cannot claim to be absolutely accurate, but very careful counts were taken over the whole area by Lt.-Col. I. B. H. Benn, B. H. T. Frere, C. Silcock, G. E. Todd and J. Vincent, so that results are probably reasonably accurate.

NORTHAMPTONSHIRE.—*continued.*

				Pairs in 1931	Year of Colonization.
Ravensthorpe Reservoir	...	...	...	1	1885 +
Stanford Reservoir	...	...	...	3 + (?)	1930
Sulby Hall	...	...	...	4	
Sywell Reservoir	...	...	...	7	
Thorpe Malsor Reservoir	...	...	...	1	1910
Wakefield Lodge, Whitlewood Forest	...	...	...	3	1926
Westhorp :—					
(1) Upper Reservoir	...	...	...	1	
(2) Lower Reservoir	...	...	...	9	1886 +
Whitewater, Stamford Reservoir	...	...	...	4	1922
<i>Not in 1931.</i>					
Biggin Pond	...	...	...		1 pr. 1922 to 1930.
Castle Ashby	...	...	...		1 pr. c. 1924-1930.

Comparing 1929-30 with 1931 :—

				No. of Pairs in 1929-30.	No. of Pairs in 1931.
Biggin Pond	...	...	...	1	0
Blatherwycke	...	...	...	3	2
Burghley House	...	...	...	4	4
Castle Ashby	...	...	...	1	0
Cransley Reservoir	...	...	...	6	2
Fawsley Park	...	...	...	3	4
Naseby Reservoir	...	...	...	6	3
Overstone Park	...	...	...	3	3
Ravensthorpe Reservoir	...	...	...	12	1
Stanford Reservoir	...	...	...	20 +	3 +
Thorpe Malsor Reservoir	...	...	...	6	1
Westhorp	...	...	...	12	10
Whitewater	...	...	...	3	4

This is a remarkable decrease—over 50 per cent. It is further accentuated by 1931 data from other lakes where there are no previous figures for comparison. At ten lakes the number of pairs which even did not nest at all is known, and below related to total pairs on the lake :—

				Total Pairs in 1931.	Pairs which did not nest in 1931.
Daventry—Large Reservoir	...	...	...	8	4
Daventry—Small Reservoir	...	...	...	3	1
Fawsley Park	...	...	...	2	2
Naseby Reservoir	...	...	...	3	1
Overstone Park	...	...	...	3	1
Ravensthorpe Reservoir	...	...	...	1	1
Sywell Reservoir	...	...	...	7	6
Wakefield Lodge	...	...	...	3	1
Westhorp—Upper Reservoir	...	...	...	1	1
Westhorp—Lower Reservoir	...	...	...	9	3

Thus of these 40 pairs present on territories in 1931, only 19 bred.

Further evidence of the curious condition in Northamptonshire is the presence of at least 45 non-breeders on various lakes, including Sulby Hall (20), Naseby (18), Burghley House (2), Armills Gate and Ravensthorpe. Two lakes were deserted for the first time in 1931.

INFORMANTS.—W. B. Alexander, Major E. E. Austen, Capt. W. H. Bailey, George Bazeley, A. W. Boyd, D. F. Brait, T. F. Brewster, Brig.-Gen. R. G. Burton, Sir Harcourt Butler, *Richard Caldicott*, R. W. Calvert, Mrs. Cotton, R. F. Courage, *R. M. Carey*, C. D. Colchester, G. Dixon, Miss C. E. Dryden, A. E. Ellis, J. M. McM. Fisher, Lord Goschen, G. H. Gray, J. P. Hewitt, Lord Hillingdon, Major C. Maunsell, C. Oldham, W. H. Powis, Col. R. Sparrow, C. F. Tebbutt, F. Tomlinson, Viscount Wimbourne, G. P. Wilson, V. C. Wynne-Edwards.

NORTHUMBERLAND. (H. M. S. Blair.)

One water held 1 pair :—

	Pairs in 1931.	Year of Colonization.
Hallington, East Lake	1	1911
<i>Not in 1931.</i>		
Capheaton	1 pr. (reared young) in 1929.	
Colt Craig	1 pr. for 2 years, c. 1912.	
Pawston	1 pr. c. 1912.	

INFORMANTS.—W. B. Alexander, S. Ash, *H. M. S. Blair*, G. Bolam, Capt. L. S. Briggs, the late Abel Chapman (records), R. Goddard, Mrs. C. E. Hodgkin, *Cuthbert Riddell*, *Sir Hubert Swinburne*.

NOTTINGHAMSHIRE. (C. B. Chambers.)

Thirteen waters held 27 pairs :—

Thirteen waters held 27 pairs :—					Pairs in 1931.	Year of Colonization.
Clumber House	...	...	...	...	4	1897 <i>c.</i>
Flintham, Newark	...	...	...	...	2	Some years
Girton, Newark	...	...	...	...	2	Many years
Lamb Close, Eastwood	...	...	...	...	3	1868
Mansfield Reservoir	...	...	...	...	2	1877
Newstead Abbey	...	...	...	...	2	1907 +
Papplewick	...	...	...	...	1	1872
Rainworth	...	...	...	...	1	1898
Rock Pond, Newstead	...	...	...	...	1	Many years
Thoresby Pond	...	...	...	...	1	1905 +
Welbeck Abbey—						
Carlusten Lake	...	...	...	...	1	1907 +
Big Lake	...	...	...	...	6	
Abbey Lake	...	...	...	...	1	
<i>Not in 1931.</i>						
Rufford Abbey	...	...	...	...	<i>c.</i> 2 prs.	1906-1930.
Welbeck, Cuckney Dam	...	...	...	...	1 pr.	1907-1930.

INFORMANTS.—*W. B. Alexander*, Lord Belper, Sergt. Bonnet, Mr. Carey, *C. B. Chambers*, Col. Clifton, E. Cohen, Lady Dennison, Mr. Edwards, Mr. Fishbourne, Mr. Henod, Lady Manvers, The Duke of Newcastle, A. Noble, Lt.-Col. W. R. Oates, C. Oldham, Mr. Saint, Miss F. K. Staunton, Mr. Summers, T. W. Turner, Mr. Ward, the late J. Whitaker, H. E. Willis.

OXFORDSHIRE. (B. W. Tucker.)

Seven waters held 15-16 pairs :—

	Pairs in 1931.	Year of Colonization.
Blenheim, Upper Lake	3	1908 c.
„ Main Lake	5-6	1908 c.
„ Bladon Water	2	1920
Clattercote Reservoir	2	1880

OXFORDSHIRE.—*continued.*

				Pairs in 1931	Year of Colonization.
Eynsham Hall	...	...	...	1	1908
Kirtlington Hall	...	...	...	1	1920 <i>c.</i>
Shelswell Park	...	...	...	1	1920 <i>c.</i>
<i>Not in 1931.</i>					
Cherwell River, near Mesopotamia...				1 pr. in 1930.	
Cherwell River, Stonebridge	...			Prob. 2 prs. in 1888.	
Ditchley Park	...	...	...	Prob. 1 pr. 1928 and other years.	
Rycote Pond	...	...	...	1 pr. 1927-29.	
Thames River, in South Stoke	...			1 pr. in 1929.	

INFORMANTS.—O. V. Aplin, J. M. Ashton, C. H. Hartley, Joan Impey, W. C. A. Sanford, H. N. Southern, B. W. Tucker and Oxford Ornithological Society.

RUTLAND. (G. P. Wilson.)

One water held 1 pair :—

				Pairs in 1931.	Year of Colonization.
Burley-on-the-Hill	...	...	...	1	1928 +
<i>Not in 1931.</i>					
Exton Park	...	...	...	1 pr. 1884 and other years; 2 prs. seen recently.	

INFORMANTS.—G. Dixon, W. H. M. Finch, W. H. Powis, Dr. G. P. Wilson.

SHROPSHIRE. (H. E. Forrest.)

Thirty-two waters held 48 pairs :—

				Pairs in 1931.	Year of Colonization.
Acton Burnell	...	...	...	2	Many years
Adderley Hall	...	...	...	1	1865 +
Aldenham Park (Shaw Pool)	...	...	...	1	1925
Apley Park	...	...	...	1	Annually
Berth Pool, Baschurch	...	...	...	1	1881 +
Betton Pool	...	...	...	1	1902
Blakemere	...	...	...	1	Recently
Bomere	...	...	...	3	1905
Brown Moss, Whitchurch	...	...	...	1	1930
Chetwynd Pool	...	...	...	2	1910 +
Cloverley Pool	...	...	...	1	—
Colemere	...	...	...	6	1903
Dothill Park	...	...	...	1	Annually
Dudmaston Pool	...	...	...	2	1900 +
Ellesmere	...	...	...	1	1866 <i>c.</i>
Fenemere	...	...	...	2	1925 +
Hardwick Pool	...	...	...	1	1880
Isle Pool, Shrewsbury	...	...	...	1	Many years (1865 <i>c.</i> ?)
Longford Hall, Aston	...	...	...	1	1911 <i>c.</i>
Lyncly's Pool...	...	...	...	1	1910 +
Marsh Farm, Much Wenlock	...	...	...	1	1931
Marton Pool, Baschurch	...	...	...	2	1912
Moss Pool	...	...	...	1	1930
Norton Mere (Tong Mere)	...	...	...	2	1913

SHROPSHIRE.—*continued.*

				Pairs in 1931	Year of Colonization.
Oss Mere	...	...	...	2	—
Shavington, Big Pool	...	...	...	2	(? Recent)
St. Alkmund's Pool, Berwick	...	...	...	1	1931
Sundorne Pool, Shrewsbury	...	...	...	1	1904
Sunderton Pool	...	...	...	1	1929 +
Trench Pool, Wellington	...	...	...	1	1927 c.
Walcot Pools	...	...	...	1	1920 +
White Mere	...	...	...	2	—

Not in 1931.

Berrington, Upper Pool	...	...	...	1 pr. in 1909.	
Hawkstone Park	...	...	...	From 1866 (Rocke) until re- cently.	
Lodge Lake, Tong	...	...	...	1 pr. until recently.	
Shomere Pool	...	...	...	1 pr. in 1913.	

INFORMANTS.—H. Armytage, E. H. Borough, A. W. Boyd, Lord Bradford, J. F. S. Browne, Capt. A. D. Bruce, W. A. Cadman, G. H. Clegg, W. Clorley, H. and R. Corbet, Major R. W. Doyne, Erskine Edmonds, James M. Etches, Lord Forester, *H. E. Forrest*, C. R. Garnett-Botfield, Major Gosling, G. H. Harvey, A. W. C. Johnson, J. Johnson, A. C. Jones, Col. Ralph Leeke, Capt. D. Nicholson, Miss Frances Pitt, George Potts, The Earl of Powis, H. Sandford, Dr. E. H. O. Sankey, Col. R. Seek, Rev. M. A. Shorland, *C. Owen Silvers*, P. Siviter-Smith, Brownlow Tower, Gomer Williams, G. C. Wolryche Whitmore.

SOMERSETSHIRE. (Stanley Lewis.)

Five waters held 17 pairs :—

				Pairs in 1931.	Year of Colonization.
Blagdon Reservoir	...	...	...	12	1907 +
Chew Magna Reservoir	...	...	...	1	1928
Litton Reservoirs—					
(1) Upper	...	...	...	1 }	1923
(2) Lower	...	...	...	1 }	
Orchardleigh	...	...	...	2	1928 +

Not in 1931.

Barrow Gurney Reservoirs	...	...	...	1 pr. 1918-28 ; 2 prs. 1929.	
Chantry Pond	...	...	...	1 pr. 1925 ; breeding not proven.	
Chard Reservoir	...	...	...	1910 + ; 2 prs. 1920 ; 5 prs. 1923 ; 6-7 prs. 1929-30. Drained 1931.	
Marston Park...	...	...	...	1 pr. 1920 onwards ; erratic.	
Mells Pond	...	...	...	1 pr. 1920 and 1921.	
Palace Moat, Wells	...	...	...	Attempted 1907 ; nest aban- doned.	

INFORMANTS.—J. Birkett, Mrs. M. B. Christie, Major Duckworth, T.H.H., *L. A. Hawkins*, Dr. Helps, E. W. Hendy, P.A.D.H., Col. H. E. Lascelles, L. R. W. Loyd, *Stanley Lewis*, F. E. May, H. Leyborne Popham, Rev. C. J. Pring, L. R. Retter, J. S. Richardson, J. S. Sabine, H. Smith, C. R. Stonor, W. C. Taunton, W. R. Taylor, B. W. Tucker, C. Tuckett, S. Tylee, A. Tyte, W. Watson, H. W. Webb.

STAFFORDSHIRE. (A. W. Boyd.)

Twenty-seven waters held 59 pairs or more :—

	Pairs in 1931.	Year of Colonization.
Aqualate	8 +	Ancient
Bellfields Reservoir	6	Many years ?
Betley Mere	2	1852
Blymhill	1	1922 +
Chillington Park	4	1929
Cop Mere	5	1924 +
Dimmingsdale (1) Pool Hall	1	Ancient
" " (2) Small Pool	1	Ancient
Gailey Pools (3)	6	1922 +
Gap Pool, Ranton	1	1919 +
Hales Hall, Cheadle... ..	1	1889
Knighton Reservoir	1	—
Knypersley Reservoir	1	1887
Knypersley Serpentine	1	1887
Little Aston Hall	1	1930
Maer Pool	3	Many years
Park Pool, Weston	1	—
Patshull Park, Great Pool	4	1921 c.
Rudyard Lake	2	1887
Stanley Reservoir	1	1887
Stubbers Green	1	—
Swan Pool	1	1931
Swinfen Hall... ..	1	1923 +
Teddesley Park	1	1928
White Stitch, Weston	1	—
X, near Dudley	2	1921
<i>Not in 1931.</i>		
Brantley Pool	1 pr. in 1930.	
Church Pool, Weston... ..	1 pr. in 1930.	
Hatherton	Usually 1 pr. nesting.	
Offley Brook	1 pr. in 1930.	
Tittesworth	Bred 1905-25 at least.	
Trentham Lake	Bred till 1915. One pair re- appeared in 1930.	
Trentham Top Pool... ..	1 pr. 1914 and 1915.	
Stretton Hall... ..	1 pr. in 1930 ; single bird 1931.	
Swithamley	Bred in past.	

INFORMANTS.—E. H. Borough, A. W. Boyd, N. M. Brittain, E. Cohen, P. C. Dutton, F. Fincher, M. Giffard, C. Halton, G. H. Harvey, R. E. Heath, J. R. B. Masefield, J. R. Morris, C. Owen Silvers, The Earl of Powis, D. H. Smith, J. Smith, F. L. Steel, M. Twentyman, W. H. Ward.

SUFFOLK. (T.H.H.)

Ten waters held about 42 pairs :—

	Pairs in 1931.	Year of Colonization.
Barton Mere	1	1912
Barnby Broad	1	Some years
Blundeston	2	1925 ?
Bosmere	1	1928 +
Culford Hall	1	?
Fritton Decoy	28	Immemorial
Holbrook Gardens	2	1927

SUFFOLK.—*continued.*

	Pairs in				Year of
	1931				Colonization.
Livermere—East Lake	1	Many years
Livermere—West Lake	1	Many years
Redgrave Hall	4	Many years
<i>Not in 1931.</i>					
Benacre Broad	Has bred irregularly.	
Easton Broad...	Has bred.	
Flixton Decoy	1 pr. <i>c.</i> 1900 ; seen 1931.	
Oulton Broad...	1 pr. irregularly ; last 1926.	

INFORMANTS.—C. E. Alford, W. P. Allen, Capt. Armytage, M. E. St. J. Barnes, Keeper Bird, Mrs. M. D. Brindley, The Marquis of Bristol, J. K. Brooke, E. H. Buxton, Keeper Chapman, W. F. N. Clowes, F. C. Cook, Herbert Drake, Major Edwards, Keeper Gale, W. E. Glegg, T.H.H., Lord Islington, E. H. Johnson, Brig.-Gen. M. Quayle-Jones, H. L. and D. L. Lack, E. M. and B. D. Nicholson, A. H. Patterson, T. G. Powell, Mrs. Ramsay, C. H. Roper, E. C. Sherwood, C. Silcock, Malcolm Stewart, Mrs. R. Tanison, Dr. C. B. Ticehurst, Miss Tidswell, O. W. Walker, Sir Courtenay Warner, J. A. H. Wood.

SURREY. (P.A.D.H. and T.H.H.)

Twenty-five waters held 47 pairs :—

	Pairs in				Year of
	1931.				Colonization.
Ash Vale	1	1916
Bury Hill, Dorking	1	1916 +
Cutmill	1	—
Enton	1	1910 <i>c.</i>
Farncombe Broadwater	1	1921
Frensham Great Pond	6	1899
Frensham Little Pond	2	1907
Frimley Green	1	Recently
Gatton Park	9	1897
Godstone, Ivy Mill	1	1931
Hedgecourt	3	1904
Mytchett	1	1913
Obelisk, Windsor Park	1	1898
Penn Ponds, Richmond Park—					
(1) Larger	2 }	1899
(2) Smaller...	1 }	
Sandhurst, Upper Lake	1	1922 +
Silvermere	1	1916
Tangley Mere...	1	1928 +
Vachery	3	1899 <i>c.</i>
Weybridge Mill Pond	1	1910 <i>c.</i>
Weybridge, Seven Arches	1	1922 <i>c.</i> ?
Wimbledon Park	2	1911 +
Wiremill, near Lingfield	1	1904
Wisley	3	Some years
Witley Park	1	1931

Not in 1931.

Barn Elms ... ..	...	...	...	...	1 pr. in 1930.
Hammer Pond, Thursley ... ..	...	...	...	...	1 pr. 1858 and earlier.
Reigate ... ..	...	...	...	...	1 pr. <i>c.</i> 1925.

INFORMANTS.—Miss. C. M. Acland, Miss B. F. Adams, H. G. Alexander, G. R. Ayres, J. Ballett, Lt.-Col. Barclay, M. E. Barclay, Miss M. I. Barnes, Earl Beatty, *Howard Bentham*, Miss N. Bewley, Sir George Branson, H. D. Carroll, Sir Jeremiah Colman, Bart., J. E. S. Dallas, I. W. de Valde, L. M. Emberson, P. A. G. Field, R. S. R. Fitter, Lt.-Col. A. M. H. Forbes, Miss Jean Gowlland, R. Halley, the late J. Rudge Harding, M. Harmsworth, *T.H.H.*, H. Hickman, *P.A.D.H.*, F. Hunt, Mrs. J. W. Kerr, E. L. King, J. G. Lewis, D. Leigh, London Natural History Society, E. G. B. Meade-Waldo, M. R. Morley, J. C. M. Nichols, Col. H. H. Norman, C. Oldham, A. R. M. Palmer, *L. Parmenter*, Lady Piggott-Brown, Mrs. Price, R. Renwick, Dr. J. R. Robertson, J. S. O. Robertson-Luxford, Col. A. E. Scott, Rev. W. A. Shaw, A. L. Simon, Miss G. B. Smith, F. G. Swayne, Dr. A. O. Ward, P. W. Welch.

SUSSEX. (Miss Janet Clark.)

Twenty-five waters held 32 to 33 pairs :—

	Pairs in 1931.	Year of Colonization.
Balcombe	2	1911 c.
Bewbush, near Crawley	1	1916 +
Bolney Mill Pond	1	—
Buckhurst Lake	1	1920 +
Burton Park (1) Upper	1	1913 + (1849)
" (2) Lower	1	1926 +
Crabbett Park	2	1900
Crowborough Warren	1	1929 +
Eridge Park	1	1909 +
Fen Place, Turners Hill	1	1909 +
Great Pond, Horsted Keynes	1	1926 +
Hawkins Pond, Horsham	1	1931
Heathyground Lake, near Crawley	2	1928 c.
Knepplake	1 or 2	Many years
Leigh Pond, Cuckfield	2	1925 c.
Lurgashall Mill Pond	1	Not known
Petworth Park, upper and lower ponds	3	1929
Pippingford Park	1	1930
Shillinglea Mill Pond	2	1903 c.
Slaugham Common, near Handcross	1	Unknown
Slaugham Place	2	1927
Tilgate, near Crawley	1	1900
Wadhurst Hall	1	1914
Warnham Mill Pond	1	1901 c.
<i>Not in 1931.</i>		
Broad Water, Ashburnham... ..	1 pr.	occasional; none since 1925.
Hammer Pond, Horsham	1 pr.	1926.
Worth Park, Milton Mount College	Has bred.	

INFORMANTS.—The Marquis of Abergavenny, E. C. Arnold, Miss Lucy H. Ashby, R. Bickersteth, Major Cuthbert Blundell, J. Walpole Bond, Lord Brentford, Lt.-Col. Sir Merrik Burrell, *A. L. Butler*, C. B. O. Clark, *Miss Janet Clark*, Raymond M. Clark, John Clarke, J. Gordon Dalglish, Miss K. Easy, Miss I. Fazan, Miss Joy Fernau, Sir Charles Fielding, Sir Cecil Fitch, Arthur G. Griffith, J. A. Harrison, Capt. F. Holland, Edward Hurtle, Henry A. Jones, *Lady Leconfield*, Capt. C. E. Lucas, H. G. Molineux, Hayley Morriss, E. H. Mostyn, Charles G. A. Nix, Lt.-Col. A. Lloyd Owen, Miss M. Parsons, G. W. Perry, George Rice, Richard S. Sandford, Arthur G. Soames, Lord

Strathcona, C. R. Stoner, N. F. Ticehurst, *Miss K. Y. Varndell*,
Reginald Ware, R. G. Williams, The Earl Winterton, Mrs. Winter-
bottom, *E. E. Wishart*.

WARWICKSHIRE. (R. Hudson and H. G. Wagstaff.)

Thirty-one waters held 54 pairs:—

	Pairs in 1931.	Year of Colonization.
Arbury, Nuneaton—		
(1) Hall Pool	3	Years
(2) Corners		
(3) Convent		
Berkswell Hall	1	Ancient
Compton Verney, North Lake	1	1925 +
Coombe Abbey	10	1888
Cuttle Reservoir, Stockton	1	Recent
Earlswood	2	1900 +
Edgbaston Pool	3	1888
Harborne Reservoir	1	1924 +
Lindridge Pool, near Coldfield	1	1920 +
Merevale, Atherstone	2	Ancient
Middleton Hall, Tamworth	1	1888
Napton Reservoirs—		
Large Pool... ..	2	1881
Small Pool	1	1881
Newbold Revel	1	1931
Newnham Paddox	1	1931
Oldbury Reservoir, Atherstone	1	?
Olton Reservoir	5	1923 +
Packington Park—		
(1) Hall Pool	1	1888-89
(2) Large Pool	2	
Plants Brook Reservoir	1	Annual
Pooley Hall Colliery, Polesworth	1	1930 ?
Ragley Park	1	1900c.
Sutton Coldfield Park—		
(1) Bracebridge Pool	1	1883
(2) Powells Pool	1	1887
Temple Pool, Upton House... ..	1	1929
Warwick Castle	4	Recent ?
Wootton Wawen Pool	2	1888 c.
Wormleighton Reservoir	1	1883
Wychall Reservoir	1	1920
Not in 1931.		
Abbey Ruins Pool, Atherstone	1 pr. nests occasionally.	
Black Pool, Atherstone	1 pr. nests occasionally.	
Langmore Pool	1 pr. nested 1911.	
Packwood House	Often observed ; nested 1920.	
Packington Park, Old Hill Pool	Often observed ; nested 1913.	
Seaswood Reservoir, Nuneaton	1-2 prs. till 1930 ; dislodged by anglers.	
Shustoke Reservoir	Nested 1900 and 1920.	
Umberslade Park, Henley-in-Arden	1 pr. in 1927.	

INFORMANTS.—R. W. Calvert, R. M. Carey, *Miss B. A. Carter*,
C. D. Colchester, *Miss C. E. Dryden*, F. Fincher, J. Gumbley, R.
Hudson, E. N. Nason, L. W. Seargill, *Miss Strang*, P. Spicer & Sons,
R. L. Taylor, *H. G. Wagstaff*, H. J. Wain, A. W. Wallis, W. A. Wilkin-
son, H. Wilson, H. H. Winterton.

WESTMORLAND. (R. H. Brown.)

One water held 1 to 2 pairs :—

	Pairs in 1931.	Year of Colonization.
Elterwater Lake	1-2	1931 ?

Not in 1931.

Loughrigg Tarn 1 pr. in 1930.

INFORMANTS.—A. Astley, R. H. Brown, Miss M. Garnett, M. E. W. North, Rev. E. M. Savage.

WILTSHIRE. (Rev. M. W. Willson.)

In 1931 the following eleven waters held 21 pairs :—

	Pairs in 1931.	Year of Colonization.
Bishopstone Pond	1	1930 +
Braydon Pond	2	1912
Coate Reservoir	6	1901 +
Fonthill	3	1927
Shearwater	2	1926 c.
Stanton Lake	1	1929 +
Stourton (I)	1	1928
Stourton (II)	1	1931
Westbury Pond	1	1925 c.
Wilton Water	1	1930 +
X Lake	2	1911 c.

Not in 1931.

Bowood 1 or 2 prs. c. 1906-30.

INFORMANTS.—E. C. Barnes, D. B. Coney, Sir J. D. Elliot, P.A.D.H., G. B. Hony, A. D. Hood, The Marquis of Lansdowne, G. Simpkins, A. E. Smith, Rev. W. Sole, E. S. Strange, J. B. L. Thompson, Rev. M. W. Willson.

WORCESTERSHIRE. (H. G. Alexander.)

Seventeen waters held 32 pairs :—

	Pairs in 1931.	Year of Colonization.
Captains Pool	1	1920 c. ?
Cotton Hackett Reservoir	1	1883
Croome Park	1	1890 c.
Hewell Lake	5	1900 c.
Hurcot Pool	1	1892 c.
Kyre Park, Tenbury... ..	2	1915 +
Lady Pool	1	1920
Lower Bittell Reservoir	6	1890 c.
Maud Pool	1	1922
Pirton Pool, Croome	1	1890
Podmore Pond	1	1925
Spetchley Court	3	1895 c.
Tardebigge Reservoir	2	1925 +
Westwood Great Pool	3	1920
Wildon Pool	1	—
Witley Court—		
(1) Lower Pool	1 }	1890 c.
(2) Upper Pool	1 }	

Not in 1931.

Island Pool, Cookley 1 pr. 1927.

Kingswinford 1 pr. 1908.

Upper Bittell Reservoir 1 pr. occasionally; 10 non-breeders in 1931.

INFORMANTS.—*H. G. Alexander, E. C. Arnold, T. J. Beeston, H. Bird, J. H. Carey, Hon. Guy Charteris, Lord Coventry, Mrs. E. Evans, H. A. Gilbert, Miss W. Heath, D. R. F. Hoddinott, J. F. C. Jackson, The Earl of Plymouth, Miss M. H. Prescott, S. Price, E. St. George Betts, Sir Herbert Smith, P. S. Smith, G. Tomkinson, Sir F. S. Winnington.*

YORKSHIRE. (H. B. Booth.)

Twenty-four waters held 65 pairs :—

	Pairs in 1931.	Year of Colonization.
Barlow Cuttings	3	1925
Bretton Park Lower Lake	2	1906 <i>c.</i>
Castle Howard	2	1890 <i>c.</i>
Chelker Reservoir	1	1921
Drax Cuttings	1	1931
Drax Hales	1	1930
Dringhouses	3	Yearly
Fairburn	16	1921
Gouthwaite Reservoir	1	1905
Harewood Park	2	1890 <i>c.</i>
Harthill Big Pond	3	1890 <i>c.</i>
Hornsea Mere	10	1844
Malham Tarn	1	1921
Newmiller Dam	1	1909
Nostell Dam	1	1892
Rockley Dam... ..	1	1931
Ryhill Reservoir	7	1890 <i>c.</i>
Thrybergh Reservoir... ..	2	1919 <i>c.</i>
Walton Park	1	1890 <i>c.</i>
Washburn Reservoirs—		
(1) Fenston	1	1902 <i>c.</i>
(2) Swinsty	2	1902 <i>c.</i>
(3) Lindberg	1	1931
Wasborough	1	1890 <i>c.</i>
Wigganthorpe	1	1906

Not in 1931.

Bretton, Upper Lake	2 prs. till 1929, 1 pr. 1930. Weed and fish element.
Carrs-on-the-Wolds	Bred prior to 1844; long ago drained.
Coniston Cold	1 pr. 1914-28.
Greasborough Dam	1 pr. till 1927 (temporarily drained).
Hemsworth	1 pr. 1893-1920 (interfered with).
Hazlewood	1 pr. till 1920.
Ripley Park	1 pr. 1904-10.
Strensall Common	1 pr. 1881 for some years. Drained.
Tulley Pond	1 pr. 1921-1930 (reeds cut); 1 pr. seen 1931.

INFORMANTS.—*W. B. Alexander, J. Armitage, A. H. Birks, T. F. Brewster, H. B. Booth, W. G. Bramley, W. Brown, R. Butterfield, C. B. Chambers, R. Chislett, W. A. Durnford, J. C. S. Ellis, W. Fearnley, R. Fortune, A. Haigh-Lumbley, J. Hames, R. J. Hindley, Col. C. J. Huskinson, D. Hutton-Croft, J. Kendall, A. Knight, H. Knight-Horsfield, D. R. Kirke, F. A. Lowe, C. Mosley, A. H. Pirus, C. F. Proctor, W. H. St. Quintin, A. F. Smith, S. H. Smith, E. W. Taylor,*

Col. Tottie, F. Vear, E. Wesley, A. Whitaker, V. C. Wynne-Edwards, J. J. Baldwin Young, V. G. F. Zimmerman.

WALES.

The responsibility for organizing North Wales lay with H. E. Forrest; South Wales with G. C. S. Ingram and H. M. Salmon.

ANGLESEY.

One water held 1 pair :—

					Pairs in 1931.	Year of Colonization.
Llyn Presaddfed	...	...	...	...	1	1926 +
<i>Not in 1931.</i>						
Llyn Llywenan	...	...	...	...	1 pr.	1907.
Llyn Penrhyn	...	...	...	...	3 prs.	1891 and 1892.
Llyn Maeiog	...	...	...	...	2 prs.	1885.
Llyn Traphwll	...	...	...	...	1 pr.	1892.

In addition single birds have been seen on Llyn Dinam in April, 1928, and Llyn Hendrefig in October, 1892.

BRECON.

One water held 8-10 pairs :—

					Pairs in 1931.	Year of Colonization.
Llangorse Lake	...	...	...	...	8-10	1882 +

CARDIGAN.

No Grebes nested in 1931 and none have ever been known to nest, no water appearing suitable for colonization.

CARMARTHEN.

No Grebes have ever bred in this county, and there are no very suitable sites.

CARNARVON.

None nested in 1931, but a pair hatched off on Llyn Cwellyn in 1926. In 1930 a pair frequented Llanberis lakes during the summer, but no young were observed. It is unlikely that they nested as there is no cover.

Unoccupied lakes in this county are very numerous, but they are fundamentally unsuitable for colonization, being very cold and bleak on account of the height, with an almost complete absence of cover and vegetable food in many cases.

DENBIGH.

One water held 1 pair :—

					Pairs in 1931.	Year of Colonization.
Chirk Castle Pool	...	...	...	...	1	1910 c.

FLINT.

Two waters held 4 pairs :—

					Pairs in 1931.	Year of Colonization.
Hanmer Mere	...	...	...	...	3	Some years
Llyn Helyg	...	...	...	...	1	1923 c.

GLAMORGAN.

One water held 2 pairs :—

					Pairs in 1931.	Year of Colonization.
Hensol Castle Lake	...	...	...	...	2	1915 c.
<i>Not in 1931.</i>						
Hirwain Lake	...	...	...	...	1 pr.	1919 and 1930.
St.-y-Nyll Ponds	...	...	...	...	1 pr.	1894 and again 1916.

MERIONETH.

One lake held 2 pairs in 1931 :—

	Pairs in 1931.	Year of Colonization.
Bala Lake	2	1913

There are unconfirmed reports of breeding on Llyn Barfog and Llyn Gwernan in previous years, but none were seen on these waters in 1931.

MONTGOMERY.

Three waters held 3 pairs in 1931 :—

	Pairs in 1931.	Year of Colonization.
Llyn Du	1	1924
Llyn Ebyr	1	1927 +
Maesmawr Pool	1	1923 +

PEMBROKE.

No pairs nested in 1931 and there is no record of nesting in this county. There are a number of rather small but suitable waters. Although there are plenty of records from the coast in winter, Grebes are seldom, if ever, seen inland. The absence of breeders is probably due to the fact that the species has not yet spread as far west as this locality, and it is possible that it may be colonized in the future.

RADNOR.

No pairs nested in 1931, but a pair is reported to have nested on Llan-Lwcyhllyn in 1926 and in several previous years. There do not appear to be any suitable sites apart from this.

INFORMANTS.—*W. Aspden*, E. H. T. Bible, E. Cambridge Philips, G. H. Clegg, Major W. M. Congreve, Major B. O. Corbett, T. A. Coward, J. Denyer, H. E. Forrest, R. M. Garnett, C. R. Garnett-Bolfield, H. A. Gilbert, Capt. D. Godfrey, J. Gunter, J. M. R. Harrison, T.H.H., P.A.D.H., G. C. S. Ingram, T. Jenkins, R. L. Jenks, B. Lloyd, B. D. Nicholson, E. M. Nicholson, E. Norton, C. Oldham, O. R. Owen, T. R. H. Owen, A. Parry, F. G. C. Piston-Warlow, J. V. Phillips, Dr. T. Robins, H. M. Salmon, Professor J. H. Salter, Miss E. Salusbury, A. Silver, Rev. H. T. P. Smith, J. R. Tallis, Dr. A. L. Tatham, J. Walpole Bond, H. C. Webb, M. V. Wenner, S. W. White, A. Whitehead, B. H. Wormald, D. Wynne.

SCOTLAND. (P.A.D.H.)

It was not found possible to get Scotland covered with the same thoroughness as England. We are, therefore, unable to give a detailed list of occupied waters, but propose here to summarize the data we have received. We shall deal with it later in a separate article, treating Scottish data in detail. There follows a list of counties where the bird probably nested in 1931, together with an *estimated* number of pairs in each county. This gives a total of about 80 pairs for the country.

County.	Estimated number of pairs 1931.
Aberdeen	2
Angus	9
Ayr	3
Blackmannan	1
Dumbarton	0-2
Dumfries	3
Dife	17
Kinross	8
Kirkcudbright	6

SCOTLAND.—*continued.*

County.								Estimated number of pairs 1931.
Lanark	...	...	...	...	...	...	...	1 or 2
Midlothian	...	...	...	...	...	...	...	3
Perth ...	...	...	...	...	...	...	...	15 or 16
Renfrew	...	...	...	...	...	...	...	— 5
Stirling	...	...	...	...	...	...	...	2
Westlothian	...	...	...	...	...	...	...	3
Wigtown	...	...	...	...	...	...	...	1

In addition to the counties occupied in 1931, Great Crested Grebes have bred in Berwickshire, Moray, Roxburgh, Selkirk and probably Peebles.

It is clear from the above that the Tay area, which in 1919 Miss Baxter and Miss Rintoul suggested might be the original home of the Great Crested Grebe in Scotland, is to-day by far the most favoured area; the counties of Fife, Perth and Angus accounting for over half the total number of pairs in the country. Nevertheless, in each of these counties there are waters, unoccupied in 1931, which have held pairs in the past.

The most notable change in the distribution of breeding pairs is the severe decrease—and in some counties the disappearance—of the species in the south. In Wigtown it has nested on eight or nine waters, in Selkirk three, in Ayr four, one of which held three pairs, in Dumbarton five or six, in Berwick two, while in Dumfries one water alone held ten pairs in 1910.

In Kirkcudbright only—for which county there appears to be no previous breeding record—do they appear to be holding their own; in fact W. B. Alexander found adults in June and July on four waters where breeding was not proved, which suggests a further spread in the county in the near future. This habit of the bird of prospecting a water for a season or two before breeding on it, to which Miss Baxter and Miss Rintoul have drawn attention, seems very frequent indeed in Scotland, while in England it is quite unusual.

Another point of interest is that they appear to be rather more sporadic in their breeding in Scotland than in England, and on the whole much less successful. 1931 was a particularly bad year in this respect—H. Boase visited a number of breeding waters in Aberdeen, Angus and Fife and failed to see any young.

Loch Spynie, Moray (Lat. 57.41 N.), where a pair nested 1913-29, is the most northerly water in the country where Great Crested Grebes have been found breeding. A pair has nested for at least ten years on the Loch of Strathbeg, Aberdeenshire, to the east of, and about three miles south of Loch Spynie, but, apart from this, Loch Spynie is about 40 miles further north than any other known breeding water.

Loch o' the Lowes, Perthshire, occupied in 1877, is the oldest known breeding place in Scotland, and by 1900 waters had been colonized in Angus, Dumfries, Fife, Lanark, Renfrew, Stirling and Wigtown.

In winter nearly all the birds leave the fresh-water lochs, but some are present in the Firths of Forth and Tay, and bays on the Fife coast. In the winter 1930-31 birds were seen on Loch Arthur, Kirkcudbright, and they are said to be regular winter visitors to lochs at Dunskey and Lochinch Castle, Wigtown.

(The number of informants is too large to be included here, and will be given in a later separate article.)

NOTES

HYBRID CROWS IN KENT.

ON May 25th, 1932, I twice put up from a small area of marshland bordering on Dungeness a party of three Crows. The first was an adult Hooded Crow (*Corvus c. cornix*) in good plumage. The second was a rather draggled looking Carrion-Crow (*C. c. corone*) with a primary missing in each wing. The third bird was clearly a hybrid, slightly smaller than either of the others, with a mouse-grey coloured back, but otherwise a dingy black all over. There can be no doubt, I think, that this was a family party, the hybrid being a young bird not long out of the nest. It seems very probable that it must have been bred in one of the thick holly clumps on Dungeness, as these are the only trees of any size in the vicinity except in the town of Lydd. Many of these holly clumps contain numerous old nests, mostly no doubt the former homes of Magpies, though several I saw might very well have once belonged to Carrion-Crows. These birds have been slowly on the increase in Romney Marsh for some years.

A single instance of attempted breeding of a Hooded with a Carrion-Crow is recorded from Hothfield in 1899 in my *Birds of Kent* (p. 205) ; but since then Mr. H. E. Forrest has kindly informed me that he saw what was evidently a hybrid on June 11th, 1925. "When motoring between Canterbury and Richborough", he writes, "and crossing the flats near the latter place, I saw a Crow flying across westwards that was evidently a cross between a black and grey Crow. The sun was shining on it so that I could see it very distinctly. The flanks were quite grey, but this colour did not extend upwards on to the back as it would in the pure grey Crow. So far as I could see the back was black, but as the bird was above me there might have been some grey on the back or neck".

N. F. TICEHURST.

PIED WAGTAIL ROOST IN DUBLIN.

THE Pied Wagtails (*Motacilla a. yarrellii*) returned in much increased force in the winter of 1931-2 to the roost in Dublin described in the May, 1931, issue of *British Birds* (Vol. XXIV., pp. 364-6). Before the end of September, 1931, a few of them were seen by Rev. P. G. Kennedy in the immediate neighbourhood, and on October 6th about a hundred were seen going to roost in the little plane-tree ; but on the following

evening there came a rush of fully 500 Wagtails, and at least double that number took possession of the roost on the night of October 8th. From that date until the end of December there were certainly well over a thousand birds, probably not far from fifteen hundred, using the roost. On some nights they used as many as four of the row of plane-trees; but by the end of the year they had concentrated exclusively on the first tree, which had the advantage of being distinctly the highest.

For some unexplained reason the birds became less numerous about the end of December, and during January, February, and the first half of March, 1932, there were possibly not more than six hundred using the roost.

The break-up for spring was, however, astonishingly slow. On March 20th I noticed that a distinct reduction in numbers had taken place. On the 24th I counted the birds flying into the tree at sunset, and found them to be 473. On the 31st they were still 418. On April 16th (the date on which in the previous year they were down to 29) Mr. Peter Dunn and I together counted 347 as they retired. On April 28th they were still 228, on May 14th 135, on May 19th about 100, on May 31st 70, and even on June 21st the roost (though now shifted into another tree, and visibly disconcerted by the crowds, bands, and flag-wavings that went on in Sackville Street during the "Congress Week" celebrations) still amounted to 48. On June 23rd, however (after a flood-lighting of the street that took place at midnight on the 22nd) the number was down to about a dozen; and these on the evening of the 24th seemed so restless that I believed their definite break-up to be now imminent, but as 45 were again roosting on the night of the 25th it seems far from improbable that these will remain throughout the summer.

C. B. MOFFAT.

NUTHATCH'S NEST IN A GUN.

IN the summer of 1931 I saw a curious nesting-site for a Nuthatch (*Sitta eu. affinis*). In the grounds of St. David's College, Lampeter, Cardiganshire, Wales, there stands an old war trophy, a German anti-aircraft gun. Down the barrel of this gun a pair of Nuthatches had built their nest and reared their family. The birds had cemented the muzzle across with plaster, until an aperture was left only just large enough for them to enter. The plaster was about two inches thick in some places and within little strips of birch bark could be

seen—nesting material so characteristic of this species. The gun stands only a few yards from a path which in term time is busily frequented by students.

Professor A. E. Morris (of St. David's College), who showed me the nest, told me that this site had been used by Nuthatches for the last three years.

HOWARD J. EMMET.

PROLONGED BUILDING-PERIOD OF LONG-TAILED TIT.

ON January 24th, 1932, a Long-tailed Tit (*Ægithalos c. roseus*) started to build in a gorse-bush in my wood near Kings Lynn. It continued building for six weeks, and I even saw it carrying nesting material when there was an inch of snow on the ground. I do not know when the first egg was laid, but the young were still in the nest on May 8th, and I believe they left it on the 9th.

N. TRACY.

PIED FLYCATCHER LAYING ABNORMAL EGGS IN TWO SEASONS.

IN 1931 a Pied Flycatcher (*Muscicapa h. hypoleuca*) laid six abnormal eggs in a nesting box here (Llysdinam, Newbridge-on-Wye, Radnorshire), the eggs being only about one quarter the normal size. The first two were destroyed, presumably by the bird herself. Three fertile eggs from other nests were substituted for the other four and these she successfully reared.

This year, in a box about 30 yards from last year's nest, three precisely similar (very small) eggs were laid and then a fourth of nearly normal size but with no shell. This one was destroyed, presumably by the bird. Fertile eggs were substituted for the three small ones and then she laid a fifth of normal size but abnormal shape, and a sixth—practically a normal egg. She has now successfully reared the substituted eggs.

The similar type of abnormality coupled with the destruction of one or two of the deformed eggs seems to make it nearly certain that this is one and the same bird.

C. VENABLES LLEWELYN.

INCUBATION- AND FLEDGING-PERIODS OF CHIFFCHAFF.

THE following observations of the incubation- and fledging-periods of the Chiffchaff (*Phylloscopus c. collybita*) were made by us at Stanway, Gloucestershire, in 1932. In each case all

the eggs hatched and all the young left the nests alive. In case No. 4, when the nest was found empty, the young were near it and still had small tufts of down over each eye. During the last two or three days the young are in the nest there is no perceptible change in their appearance.

It will be noticed that incubation in each case was 13 days and the fledging-period 14 days.

	May	May	May	May	May	June	June	June
Nest	13	14	27	29	30	10	12	13
1	—	*6 eggs	6 p.m. hatched	—	—	9 p.m. nest empty	—	—
2	3 eggs	—	6 eggs	Noon hatching	—	—	9.30 p.m. nest empty	—
3	2 eggs	—	6 eggs	—	Noon hatching	—	—	6 p.m. nest empty
4	—	3 eggs	6 eggs	—	Noon hatching	—	—	6.30 p.m. nest empty

*So found eggs fresh. Presumed incubation begun this date.

GUY CHARTERIS.

W. WILKINSON.

CURIOUS FATALITY TO A REDBREAST AND ITS YOUNG.

LORD DUNLEATH has sent me an adult female Redbreast (*Erithacus r. melophilus*) which was attached to a nestling about two days old by a horsehair, which passed down the throat of each. The birds were picked up dead in this condition on the lawn at Ballywalter Park, northern Ireland, on June 11th, 1932. About three inches of the hair binding the two birds was exposed and each end passing down the gullet of each bird was firmly fixed in the contents of their gizzards. The gizzards were both packed tight with insect food, which has been very kindly examined by Dr. F. Laing, of the British Museum. Wings, legs and parts of the body of *Bibio*, probably *nigriventris*, and a Crane fly, *Tipula*, probably *oleracea*, were plentiful, and most of the entangling of the hair was in these remains. There were also weevil remains, possibly *Sciaphilus muricatus*, and a number of legs of spiders and some grass-seeds.

I was unable to pull the hair out of either bird's mouth; and it seems evident that the parent bird had dragged the nestling out of the nest in its effort to get free from it. One may suppose that the hair became entangled with the food, part of

which was swallowed by the nestling and part by the parent, and that subsequent pulling away by the old bird only served to tighten the entanglements in the gizzards.

H. F. WITHERBY.

ALPINE ACCENTOR IN CORNWALL IN JUNE.

ON June 14th, 1932, I watched a male Accentor (*Prunella collaris*) on the cliff top of Lantivet Bay in south-east Cornwall. The cliffs at that point face due south and form part of a wild, unpopulated stretch of coast between Polperro and Fowey. On June 15th and 16th the bird was still there, but I had no opportunity of watching it for any length of time. I could not see any female.

The bird was fairly shy when openly approached, but I had a splendid view of him through my glasses. His favourite perch was the bent stem of a withered teasle which actually overhung the cliff-edge. From this perch, and from others near by, he made occasional little soaring flights (fluttering his wings throughout) not unlike those of a Spotted Flycatcher, but less sustained and less erratic. He sang freely from his perch and sometimes as he flew upwards. He was always silent during the short descent. I heard no alarm note. The song was actually similar to that of a Hedge-Sparrow, but, in the effect it had on the listener, strangely different—an effect due, doubtless, to a peculiar quality of tone. It was a friendly, yet remote, little song.

When feeding, the bird crept about the tangle (chiefly brambles) rather as a Hedge-Sparrow creeps along a hedge but with more sudden movements. I could not make out through my glasses whether he caught insects on the wing or not. I should say he did not.

He was a strongly built little bird, definitely larger and stockier than a Hedge-Sparrow (6-7 inches long?). Bill tinged with yellow and rather short (though slender) for the size of the bird. Shortish and rather thick neck. Throat greyish and dark speckling. Breast a very soft colour, difficult to define: perhaps a very faint, yet rich, greyish-brown, with a suggestion of pink. Head light grey-brown and somewhat flattish. General colour of upper-parts a rich brown with dark brown (black?) wedge-shaped splashes (small). Two narrow white bars on wings separated by a broad band of dark brown (black?). His flanks and lower underparts were rich light chestnut. His legs appeared to be pinkish, his feet very strong. The primaries seemed to darken at the tips.

I had previously watched the species in Austria and south Germany.

EDWARD CRANKSHAW.

HOOPOE IN CHESHIRE.

DURING the week-end June 11th, 1932, a Hoopoe (*Upupa epops*) appeared on the outskirts of Birkenhead, Cheshire, where its gaudy colours and crest attracted great interest in the neighbourhood. It frequented the vicinity of St. Aiden's College and was frequently seen flying from a wood near the college to a quarry, with much adjacent waste ground, in Holbeck Road. Only one bird was noted, and though we did our best to protect it and keep it secret, it vanished after the first week-end. Careful watchers elsewhere in the area did not note it afterwards, but we feel confident it was not shot. The last previous Cheshire record, 1927, was also on the outskirts of Birkenhead.

ERIC HARDY.

WHOOPER SWAN IN MORAY AREA IN JUNE.

WHILE motoring with Dr. H. B. Elton along the road which runs along the west side of the Cromarty Firth from Dingwall to Alness on June 3rd, 1932, we saw a Whooper Swan (*Cygnus cygnus*) close to the shore. The bird showed no fear and allowed us to examine it closely with glasses from the car. After some minutes it became uneasy and took wing down the Firth. The road was practically parallel with the bird's line of flight and by regulating the speed of the car we ascertained that we could keep exactly level with it at just over 30 m.p.h. but at 34 we gained rapidly. When last seen the bird was heading towards Invergordon.

F. C. R. JOURDAIN.

LITTLE GULL IN LANCASHIRE.

ON May 14th, 1932, on the Ternery on the west Lancashire dunes between Woodvale and the shore, I watched what I took to be a Little Gull (*Larus minutus*). The bird, which was consorting with a flock of Black-headed Gulls, did not alight in my vicinity, but its squarish tail and absence of black on the wings suggested the identification.

ERIC HARDY.

BLACKBIRD USING PREVIOUS YEAR'S NEST.—Mr. C. Oakes writes that by June 1st, 1932, a Blackbird (*Turdus m. merula*) had laid a clutch of five eggs in a nest from which a brood of four had been reared in 1931. It was situated in a clump of gorse near Padiham, Lancs., and had remained through the winter in good condition. No alteration or addition was made

in 1932 and Mr. Oakes suggests that it is probable that the chosen site and nest had been interfered with at the time laying began and so the old nest was made use of in the emergency. The brood was reared, although the nest became tilted at an angle of 40 degrees in the process.

GOOSANDER BREEDING IN SELKIRKSHIRE.—Mr. N. Tracy informs us that on May 25th, 1932, he saw a duck Goosander (*Mergus merganser*) swimming on St. Mary's Loch with six young a few days old. The bird was first noted as breeding in Selkirkshire on the River Ettrick in 1930 (*antea*, Vol. XXIV., p. III).

STOCK-DOVE LAYING THREE EGGS.—Sub.-Lieut. M. C. Hoskin, R.N., informs us that he found a nest of Stock-Dove (*Columba oenas*) at Long Newnton, Glos., on June 18th, 1932, with three eggs. This number has been recorded in the case of the Stock-Dove in the British Isles on at least thirteen occasions. See *British Birds*, Vol. IV., p. 155; *Zool.*, 1876, p. 875; 1887, p. 433; 1888, p. 398, etc.

GREY PLOVER IN SUTHERLAND.—Mr. E. Cohen informs us that he saw a party of five Grey Plover (*Squatarola squatarola*) at Dornoch, on July 8th, 1932. Four were in winter dress and one had the black of the summer plumage.

SANDWICH TERN IN HERTFORDSHIRE.—Mr. C. S. Baynes informs us that a Sandwich Tern (*Sterna s. sandvicensis*) was seen by members of the London Natural History Society on May 8th, 1932, at the Marsworth Reservoir, near Tring. The bird was first noticed about mid-day on a post. It then flew off, but returned shortly afterwards and was seen in the same position in the evening.

LETTERS.

"DRUMMING" OF GREAT SPOTTED WOODPECKER.

To the Editors of BRITISH BIRDS.

SIRS,—I have made a special study of the drumming of the Great Spotted Woodpecker (*Dryobates m. anglicus*) this year, and have watched them nearly every morning from the beginning of April until the middle of May from 5 a.m. to 8 a.m. Altogether I have watched four different pairs using sixteen different drums. The drums were all dead branches, most of which were devoid of bark, and were on four different kinds of trees, oak, Scots pine, silver birch and Spanish chestnut. Eight drums were in regular use, the remaining eight being used only under stress of excitement. Besides these drums there were several others in regular use which I did not find. Of the eight in

general use, six had cracks running down them, the other two were too high up to investigate properly. Every time the birds drummed I could see the direct impact of the beak on the wood ; in one case the bird used to drum on one edge of the crack. On one occasion I saw the female " drum " the male up to the tree. The male settled on the opposite side of the drum, then chased the female round and round the drum until they reached the top, where coition took place. On another occasion, when I was watching the male excavate the nesting-hole (by the way, this particular male did nearly all the work, I only saw the female in the hole for a minute in the course of a fortnight's watching and then it only threw out a few chips), the female started drumming some way off and the male left the hole and flew straight towards where she was drumming. On one occasion when I was watching the nesting-hole the male became aware of my presence, and instead of going into the hole settled in a nearby tree and, throwing back its head, as Mr. Swann describes (Vol. XXV., p. 364), made a sound like Wild Ducks quacking at flight-time a long way off, but it certainly did not resemble any drumming that I have ever heard.

N. TRACY.

COLOUR OF IRIS IN GREAT BLACK-BACKED GULL.

To the Editors of BRITISH BIRDS.

SIRS,—I have recently been photographing a Great Black-backed Gull (*Larus marinus*) from a distance of 7 ft. and noticed that the iris was bright pale blue. My wife was also struck by the bright blue colour. The *Practical Handbook* gives the iris as lemon-yellow. The other bird of the pair did not come near enough for accurate observation.

A. G. HAWORTH.

[During the nesting season at any rate the iris of this species appears to be bluish-grey in life.—F.C.R.J.]

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THE GREAT CRESTED GREBE ENQUIRY, 1931, (PART II.)*

BY

T. H. HARRISSON AND P. A. D. HOLLLOM.

HOLLAND.

The Great Crested Grebe is a common nesting species in all suitable sites in this country, the chief localities being the numerous lakes of Friesland, the waters in the north-west of Overijssel (including the IJssel delta, which is said to contain 100 pairs), the Naardermeer and the lakes in the province of Utrecht, the lakes of Zuid Holland, and Texel Island.

Numbers appear to be increasing in many localities, and at Texel and the Naardermeer have recently been doubled. On the other hand numerous sites have been drained in connexion with land reclamation schemes, and the increase may partly be due to concentration on the remaining suitable localities.

At the mouth of the IJssel there is a colony of Grebes nesting, ten nests with eggs being observed in 1926 all close together, besides many others building. The colony is situated at the point where the IJssel runs into the Zuiderzee, but the water there is not salt. (Information from Fr. Haverschmidt, and J. Drijver.)

BELGIUM.

Van Havre in *Les Oiseaux de la Faune Belge* (1928) gives it as nesting only on the creeks of Moerbeke-Waes and Zuiddorpe and possibly at Schaerbeek.

FRANCE.

The Great Crested Grebe is a widespread breeding species in France, common in areas such as Sologne and Brenne, but it has not been recorded as having nested in Finistère (Lebeurier) or the waters of Salses and St. Nazaire in Pyrénées-Orientales. It does not winter inland in the east of France but Dr. L. Bureau observes it regularly on many waters in the west, where the wintering birds arrive in October/November and leave again in March. On the sea it is observed along the coasts of Brittany, particularly the south coasts (Lebeurier) and is abundant in certain places, for example Le Croisic.

The inhabited waters are usually over 30 acres in size, with light vegetation; the dense growth of *Phragmites* appears not to suit the bird. M. J. de Chavigny estimates the normal density of the population as one pair per 35-75 acres. Exceptionally, however, nests are found on small waters of 5 to 7½ acres. It would seem, therefore, that in France Grebes require a greater area of water than in England. They nest singly, and not in colonies. One small colony, however, has been reported from Sologne (Tristan, *La Faune Ornithologique de la région Orléanaise*, 1932). It was well distributed in the north-west by the end of the last century, as D'Hamonville (*Les Oiseaux de la Lorraine*, 1895) speaks of one, and in some cases two pairs per water in Lorraine. (Information from Noël Mayaud.)

*Correspondents have kindly pointed out mistakes in Part I. published in the August number of *British Birds*, and we shall be grateful for any further corrections so that these may be included in a list at the end of the Report. These should be sent to P. A. D. Hollom, care of the Editor.

GERMANY.

Except where destroyed as inimical to fisheries, breeds on all suitable pieces of water in N. Germany from Schleswig-Holstein to E. Prussia, but is scarcer in the west. Rhine Provinces.—Formerly rare but now established as a breeding species (Le Roi). Brunswick.—Breeds commonly on larger pools at Riddagshausen (Blasius). Mark Brandenburg.—Common on all reedy pools and lakes. On one lake (Werbellinsee) c. 350 birds counted in September. Many destroyed by fishery reservation. In one district 942 killed in five years (Schalow). Westphalia.—Does not breed (Le Roi). Pomerania.—Seebohm (*Hist. N.*, III., p. 457) describes large colonies at Lantow See and Garda See. Prussia.—Breeds sometimes in large colonies but is local and absent from some districts (Tischler). Silesia.—Generally distributed and locally common (Kollibay). Saxony.—Also fairly common on larger lakes; less numerous on small pools; breeds up to about 1,600 ft. (Heyder). Baden.—Not rare on old course of the Rhine (Fischer). Bavaria.—Common (Jäckel). Posen.—Fairly common on all larger sheets of water unless disturbed (Hammling).

(Information from F. C. R. Jourdain.)

ITALY.

The Great Crested Grebe is not plentiful as a nesting species in Italy, and its range is rapidly becoming more restricted owing to land drainage. It nests in the Venetian estuary, the Po marshes, Lake Mantova, Lake Garda, Candia Canavevese, and various other waters in the Italian Alps. It has been observed in numbers at Lago Matese, near Naples, and probably breeds at other waters in the Appenines. It is so reported from Lake Oristano in Sardinia. Land drainage seems likely to restrict its range even more in the future. (Information from Comte E. Arrigoni degli Oddi, and B. W. Tucker.)

SWITZERLAND.

It breeds locally on the great lakes, but only where there is enough vegetation to provide cover. (Fatio and others.)

HUNGARY.

It breeds commonly where suitable cover exists. (Frivaldsky, Madarasz, etc.)

ROMANIA.

In Transylvania it breeds in numbers on the Mezöseg Lakes (v. Csáto) and commonly in the Dobrogea (Dombrowski, Reiser, etc.).

BULGARIA.

Reiser states that it is common on the Svistov Lake and is met with in incredible numbers on the Sreberna Swamp. (F.C.R.J.)

[No proof of breeding in Greece.]

DENMARK.

Breeds quite generally. (Winge.) Breeds generally and is migrant, but some stay through the winter. Known since the Stone Age. (Schjöder.) Not scarce, but confined to the larger lakes where there are reed beds. (Winge.)

NORWAY.

The Great Crested Grebe is a rare breeding species, well-known in only one locality, Jaederen, where the first Norwegian nest was found in 1894. In 1913 three pairs nested on Lake Grudevand, in spite of shooting during 1910 and 1911, when 17 birds were killed. In 1920 seven lakes inhabited in this district held twenty pairs, and numbers are increasing, possibly owing to a spreading from Sweden. (Information from *Norges Fugle*, Collett and Olsen, and H. M. S. Blair.)

SWEDEN.

The Great Crested Grebe is now a plentiful breeding species in Sweden, the principal spread having taken place between 1880 and 1890. It extends north as far as Gästrikland and Dalarne, and has been reported once in November, 1889, from Härjean, in Härjedalen, and twice as far north as Muonio, Lapland (Spring, 1903, and August, 1919).

In central Sweden, where it was formerly uncommon, it increased rapidly from 1880 and became very plentiful, especially at Lake Malaren and at Upsala in the province of Upland. At Ekolsund the increase took place earlier, and it was quite common in 1860. The species is now so plentiful that at Vallentunasjön over a hundred birds may be seen at the same time.

In western Sweden suitable waters are less numerous, but it is common all over Lake Vänern and has increased greatly in the Karlstad district. At Grumsfjärden, where only two pairs nested in 1858, more than 500 birds were counted in 1900. In southern Sweden colonization seems to have taken place somewhat later, between 1895 and 1900, but the species is now plentiful at most localities.

Owing to the very large number of lakes it is probable that there are a great many pairs in Sweden. One of the chief points of interest is the enormous increase throughout the country in 1880-1890, which coincides remarkably with the big increase in England, where forty-one lakes were colonized during this period. There is still plenty of room for expansion and there is little doubt that numbers are steadily increasing. (Information from *Nordens Föglar*, L. A. Jägerskiöld and Gustaf Kolthoff, and summary from Sven Hörstadius.)

FINLAND.

The Great Crested Grebe appears to be generally distributed throughout the country and is common as a breeding species, ranging as far north as Vasa and Munsila on the west coast, and in the interior being common about the Kumo river, south and central Tavastland, and South Karelen. In Nyland it is stated to be the commonest species of Grebe.

As in Sweden, an increase in numbers took place about 1880, but definite information is lacking. (Information from H. M. S. Blair.)

BALTIC REPUBLICS.

Breeds commonly in Esthonia, Latvia and Lithuania (Loudon). Nests regularly on larger lakes with sedge and water lilies (Russow).

RUSSIA.

It breeds on Lake Onega, Perm gov., central Tobolsk and south Tomsk gobs., also on lower Dniester, Putrid Sea, Sea of Azov, etc. (Buturlin).

ASIA.

The same sub-species of Grebe, *Podiceps c. cristatus*, which nests in Europe, is also found in large numbers in central Asia, usually at a high altitude. In Tibet, for example, large numbers breed at Kala Lake and the Yamdok Tso, and in 1924 and 1926 a colony of fifty was noted by F. Ludlow at the former locality. In Turkestan similar colonial nesting takes place on the lakes of Sughuchak, west of Yarkand.

It also occurs in many other parts of Asia, east to China and Japan and south to Cyprus (occasional), Asia Minor, Iraq, east Persia, north Baluchistan, north India (occasional).

The most remarkable report is from Sikkim, where Col. R. Meinert-hagen found a colony of 58 pairs on Tso-Kar Lake at 14,900 feet. There are no reeds of any description on this lake and the nests were placed conspicuously in the open water, some of them constructed so close together that they touched. This colonization of a superficially unsuitable site at a very high altitude is in marked contrast to the position in Great Britain, where anything in the nature of a mountain lake is studiously avoided. The fact that such a site is occupied shows that Grebes are well established in Sikkim as a breeding species. Apparently small crustacea are the only available food in some densely populated breeding localities.

AFRICA.

Breeds in great numbers in the marshes of N.W. Marocco (Irby), also in Algeria (Lac Fezzara). Possibly also in N. Tunisia. (F.C.R.J.)

III. HISTORY.

1) Geological Data : the Great Crested Grebe is Prehistoric.

Important evidence of very ancient Grebe distribution is given in a paper by Alphonse Milne-Edwards in the *Annales des Sciences Naturelles* (5me ser, tom. VIII., pp. 285-293, 1868). A number of bird remains from the peat bogs of the marshy inland near Cambridge were examined. Among these were the remains of a unique Pelican (unlike any living form known), Whooper Swan (*Cygnus cygnus*), Wild Duck (*Anas platyrhynchos*), Garganey (*Anas querquedula*), Bittern (*Botaurus stellaris*), Coot (*Fulica atra*), and Great Crested Grebe. The Swan remains were very numerous, and Grebes were the next commonest. In the same deposit were found remains of wolf, bear, wild boar, great Irish elk, wild ox, etc. In the bed above were walrus, porpoise and whale remains.

This very important discovery dates the species as prehistoric.

2) Past Centuries.

There is every reason to believe that the species was well distributed in East Anglia and Cheshire centuries ago. Unfortunately the confusion of names and birds was particularly great; the breeding summer specimens were believed to be of

a different species to the winter ones, an error which persisted until quite late in the nineteenth century, and the point was by no means cleared up when Montagu wrote his *Ornithological Dictionary*. The chaos was made worse by the use of names such as loon, ducker, gargoose, in reference to any sort of grebe or diver. One clear and exceptionally interesting record is that given by J. E. Harting (*Zool.*, 1884, p. 350) : in the reign of Edward I. land was held near Aylesbury in Buckinghamshire subject to certain items of rent, among them the producing of two Grebes three times a year. This suggests a wider distribution than the fens and meres ; the pond referred to may be Thame Park or Wotton Park, both very small now.

In 1768 Pennant (*British Zoology*, II.) wrote that it was "scarce in England", but common in winter in Lake of Geneva " . . . killed for the sake of the beautiful skins . . . and each bird sells for about 14/-". It is curious that it should have been so scarce at this early date. The persecution of the bird did not begin in Britain until ninety years later, when the first British Grebe was shot for its feathers. A few were perhaps taken for table, but the vogue for Herons, Grebes and other such wild fowl as table delicacies had passed into the forgotten land of duel and royal feast. There was less interference than a hundred years later when the bird began to spread with such success. Why, then, were Grebes so scarce? And that question leads us to search for other clues in the early nineteenth century.

(c) **The Early Nineteenth Century.**

A representative idea of the Grebe population in the early nineteenth century may be gained from three references relative to the same period : Rennie's edition of Montagu, Selby's *British Ornithology*, and Hewitson's *Eggs of British Birds*. Montagu, in 1831, says "This bird is indigenous in Britain ; it breeds on the meres of Shropshire and Cheshire". Referring to the same year, Hewitson records five nests on one pool in Norfolk. From an important article by A. G. More (*Ibis*, 1865) it appears that at this time pairs also bred in Sussex, Herts, Suffolk, Hunts., Worcs., Warwick, Lincoln and Yorks. Several other authorities mention one or more of these counties, and the weight of evidence strongly indicates that, up to 1850, the bird was well distributed in smallish numbers in about thirteen counties.

(d) **Ancient Sites.**

Twenty-one lakes can be classed as "immemorial"—never without Grebes as long as can be remembered, and colonized

at least before 1840. Of these ten are in Cheshire, in two main groups, the Delamere Forest group—comprising Petty-pool, Oakmere, Winsford Flash, Little Budworth, Oulton and Tilstone Lodge; and the Northwich group, comprising Bar-mere, Cholmondeley Park, Combermere and Marbury; at Rostherne nesting was known prior to 1865, and there is no reason to suppose the lake was ever deserted. About six ancient sites are on the Norfolk Broads; though it is not at all certain that the Filby group was not deserted about 1860, these sites were certainly used around 1825; the species has always nested under protection at Hoveton, Ranworth and one or two other Broads. Aqualate, Dimmingsdale and Maer Pool are three ancient sites in Staffordshire. Fritton in Suffolk and Knowsley in Lancashire complete the list. These latter sites are probably not so ancient as the Norfolk and Cheshire ones; certainly there are only one or two pairs on each. In addition, Hornsea and Carrs in Yorkshire were recorded as having nesting pairs in 1844, and there is no reason to suppose they were not present before, but there is evidence that Hornsea was deserted between 1870 and 1884, while it is possible, though very unlikely, that Burton (Sussex) was used prior to 1849.

e) **The Massacre.**

About the middle of the nineteenth century suddenly began a real interference with the Grebes in Britain. For a great many years there had been a regular traffic on the continent, and Grebe feathers, particularly the breast feathers as “grebe pens”, were fashionable in Britain. But not until 1857 did anyone realize that the market could, to some extent at least, be supplied from home. The gentleman to appreciate these possibilities deserves a measure of immortality, for it is not absurd to attribute the whole subsequent decrease to his initiative, and had it not been for him the bird would perhaps never have been protected. Indeed, it is likely that we should be more than grateful to him for the present numbers of Great Crested Grebes. The name of this gentleman was Robert Strangeways, and his address 70 and 71, Chiswell Street, London. On July 15th, 1857, he wrote to the *Zoologist* and his letter was published on p. 3209 of the then current number, as follows:

In the months of April and May last I collected 29 of these birds in full summer plumage, all shot in Norfolk. Three of them are reserved and they are now in the Great Exhibition in Hyde Park, where they are exhibited by Messrs. Robert Clarke & Sons, the furriers, in Class 18, to which they very appropriately belong, as the breast of this bird has become a fashionable and very beautiful substitute for

furs . . . The rest of the skins I have manufactured into ladies' boas and muffs, and may perhaps say they are the first British specimens used for this purpose. The market for Grebe is chiefly supplied from Southern Europe.

The importance of this letter cannot be over-estimated ; it is noticable that he was able to shoot 29 birds in Norfolk, which proves that they must have been quite numerous there. Only ten years later there were not many more than a dozen pairs in all in Norfolk.

From 1857 onwards there was a steady traffic in the birds, particularly in Norfolk, where many Broads were easily available for unscrupulous gunners. Stevenson's annual Norfolk reports in the *Zoologist* contain many notes of numbers killed—on one occasion eight being sold at only 1s. each, a big difference from the 14s. mentioned by Pennant. Booth in his *Rough Notes* said : " Considering persecution it is a wonder that survivors are still to be found " ; he adds that it is unlikely to increase because of plumage trade, egg collectors and lack of protection. Writing in 1876, Johns remarks that it was common thirty years ago in Norfolk, rare now. All the time shot-guns were improving enormously in efficiency and decreasing in price, so that they came within the practical scope of almost any man. Along with this came the increase in collecting, the mid-Victorian epoch of plumes and stuffed Kingfishers, the increased value of eggs as the species became more scarce. All this combined nearly wiped out the Grebes. Numbers in Norfolk, Stafford and Cheshire were greatly reduced, apparently none were left in Shropshire, and only one or two pairs stayed on at certain large private and protected lakes elsewhere. In 1860 an approximate estimate of the population from available data gives results thus :—

			Approx. Max. Pairs.	Approx. Min. Pairs.	Probable No. of Pairs.
Cheshire ...	...	...	25	15	20
Norfolk ...	...	...	26	8	12
Stafford ...	...	...	12	5	5
Suffolk ...	...	...	6	2	3
Lancashire	...	...	1	1	1
Yorkshire	...	...	2	1	1
			—	—	—
			72	32	c. 42 pairs
			—	—	—

This figure of about 42 pairs is not far wrong. Had it not been for private ownership the bird would probably have become extinct. Not that the landowners took any special trouble about the Grebes ; they merely preserved their land against all comers ; the Grebes happened to benefit.

At the same time it is very important to note that fresh colonization took place in 1852 (at Betley, Stafford), in 1865 and 1866 (three meres in Shropshire), 1867 (Tring, Herts.), and 1868 (Lamb Close, Notts.). These were probably genuine increases, not entirely birds being driven off one water on to another. The colonization of Notts. and Herts. was an important step; the Tring pair thrived and produced 75 pairs in less than twenty years, thus eventually forming a distribution centre for south central England. These extensions occurred at the height of the Grebe slaughter and seem to indicate that protection or lack of protection was not the only thing concerned in this increase.

) The Bird Protection Acts, 1870-1880.

About the end of the 'sixties people began to realize that gunners and collectors were seriously interfering with bird-life, aquatic birds in particular—for they are mostly large, conspicuous, edible and easily obtained. No special action was taken on behalf of the Great Crested Grebe—it was included along with other species equally in danger. From 1870, the year of the first bird protection Act, several measures were introduced in rapid succession:—

1870. "Act for the Preservation of Sea Birds."

1873. An Act "for the protection of certain inland birds during the breeding season."

1877. "Act for the preservation of wild fowl."

1880. "Wild Birds' Protection Act."

The first proved of no direct assistance to the Grebe. But the 1873 Act gave protection in the nesting season. Unfortunately the birds arriving as usual on the waters in March were once shot, as the Act did not operate until April 1st, so early as many birds were killed as ever before. But the first step had been made, and it was not long before the second. The 1877 Act was a help, but the first comprehensive measure of 1880 made a big difference, for it created a general close season from March to July. It was in 1880 that the real increase began, though seven new lakes in five counties were colonized between 1872 and 1879.

) After the Act of 1880.

Other protection orders were made after 1880, but none had any very important bearing upon the Great Crested Grebe. It must not be imagined that the bird was now safe to increase as it would, unmolested by man; that is far from true, even in 1931. Birds were still shot regularly, and in the *Zoologist* of 1880 Stevenson wrote of a bird shot at Rockland—

“ Such was all the protection offered by certain new Acts of Parliament, it being no one’s business to prosecute the gunners, collectors, or dealers ”. Five were killed at Yarmouth in October, 1880 ; during February, 1881, six were on sale in Yarmouth market. T. A. Coward (*Bird Haunts and Nature Memories*, pp. 71-77) states that under protection the value of skins went up to £1 each. The fashion for Grebe “ furs ” lasted at least twenty years after the 1880 Act, and did not finally die out until about 1907 or 1908.

Yet between 1880 and 1890 forty-five new lakes were colonized in England and the bird began to spread in Scotland. At the same time big increases were noted in Norway and Sweden, a fact which again indicates some factor more fundamental than British protection alone. Since then the species has never ceased to colonize new localities.

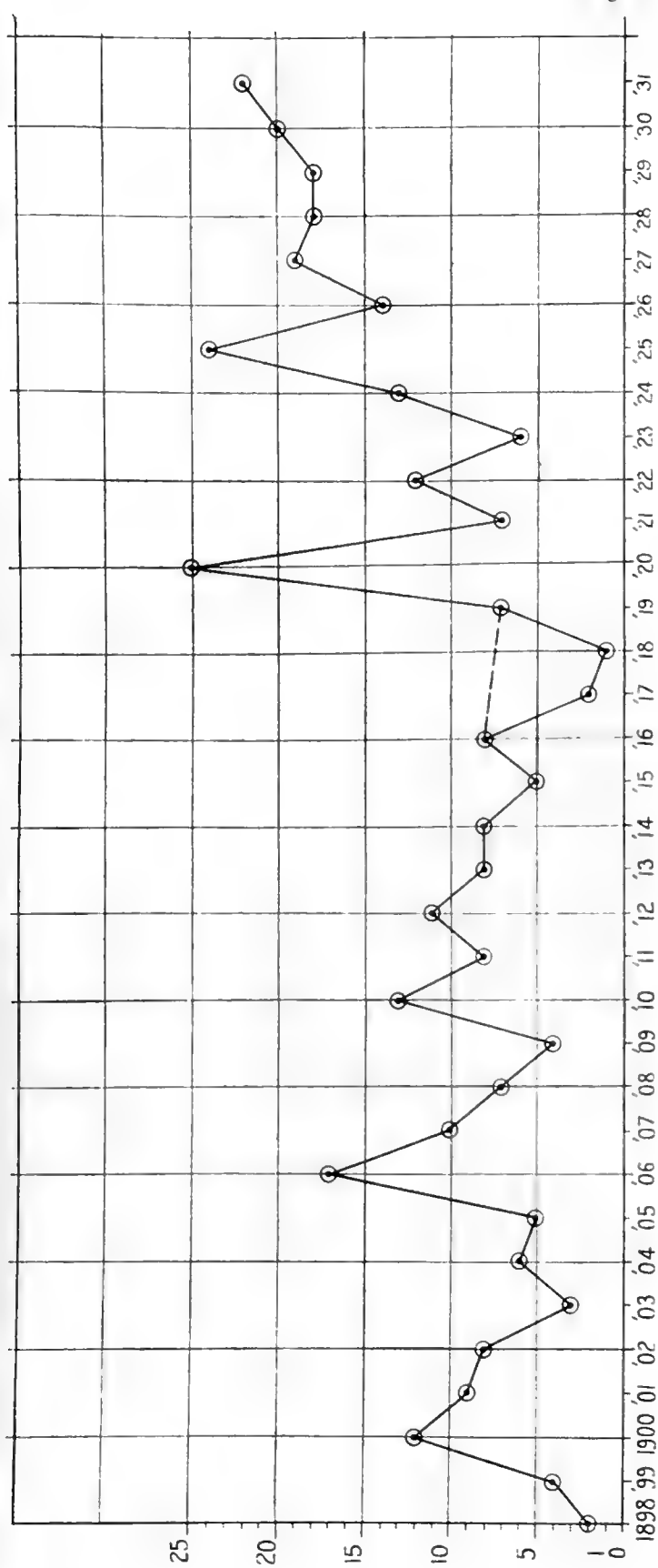
(h) **Phases of Increase.**

Thus it seems that since 1865 there has been a steady increase, which started in real earnest in 1880, after which there was only one year (1882) when no new lake was colonized. New lakes were colonized as follows :—1881-1889, 30 ; 1890-1899, 80 ; 1900-1909, 80 ; 1910-1919, 71 ; 1920-1931, 198. This can be shown rather clearly by a graph, which exhibits a considerable irregularity and some signs of a five to six year periodicity.

The largest number of counties involved in one year’s spread is eighteen counties in 1927, when more than one lake was colonized in only one county (Herts.). The counties concerned are Beds., Berks., Bucks., Cheshire, Essex, Gloucs., Herts., Lincs., Middlesex, Norfolk, Oxon., Salop, Suffolk, Sussex, Warwick, Wilts., Worcs. and Montgomery. The largest number of lakes colonized in one year within one county is six, in Yorks., 1890 ; five were colonized in Warwick 1888 and Cheshire 1901. Four in one year have been colonized in Staffs. 1887, Essex 1906, Berks. and Warwick 1920, Yorks. 1921, and Stafford again 1930. Some counties have shown a definite periodicity in spread, with very distinct phases unlike the rather diffuse movement shown above. Conspicuous in this connexion are Beds., Berks., Bucks., Oxon., Salop, Staffs., Sussex ; to a lesser degree Wilts. and Worcs.

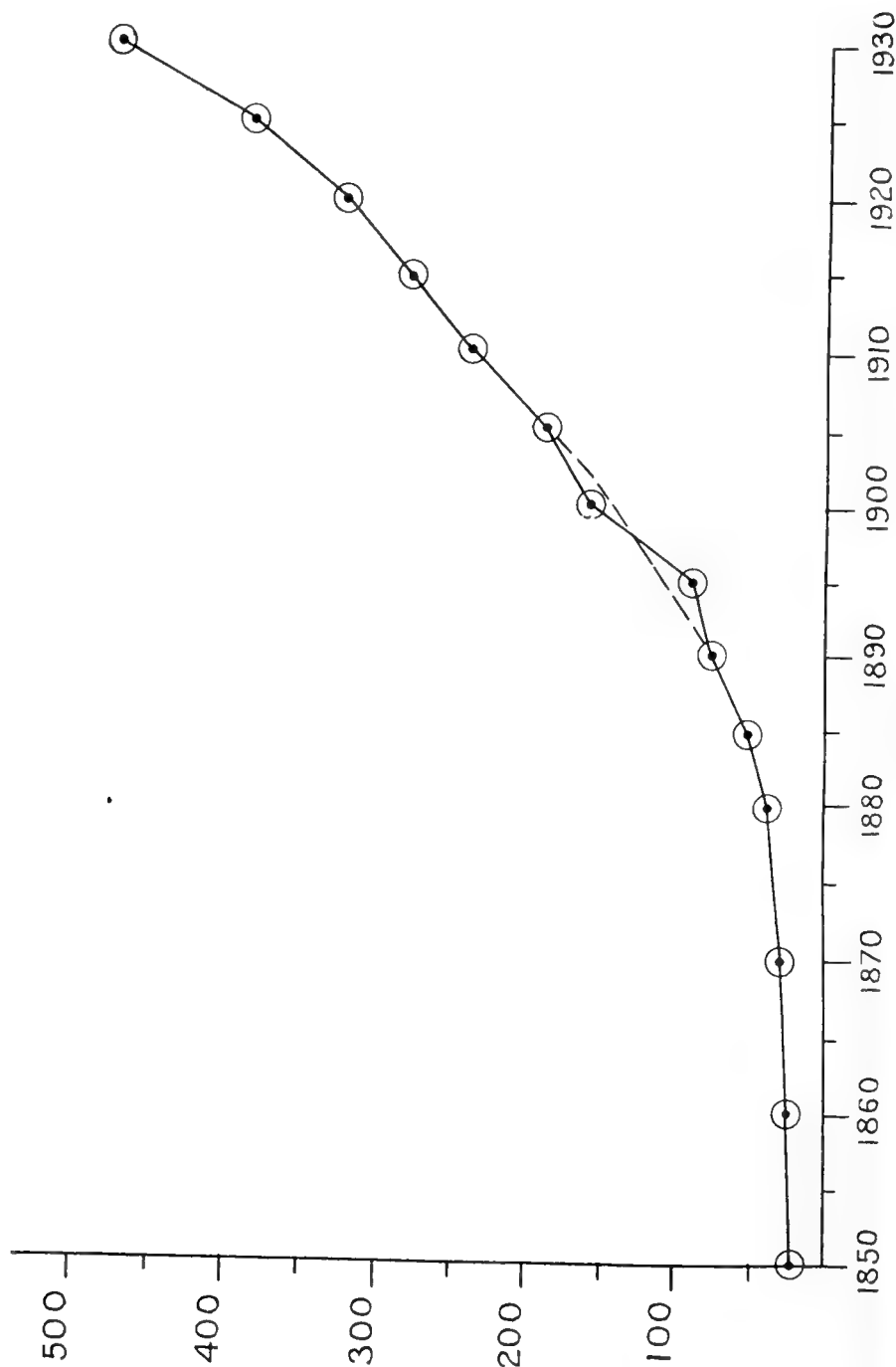
The cyclic nature of the increase is fairly well marked, but much complicated by different behaviour in different counties during the same year.

At first two or three sites were colonized each year, though four in 1885, five in 1887, seven in 1888, eleven in 1890. In



Graph I. Number of lakes newly colonized each year, 1898-1931.

addition, forty-four were colonized at unknown dates in the later part of the period. In 1900 the increase rate became faster, from 1900 to 1910 consecutively the following numbers were colonized: 12, 9, 8, 3, 6, 5, 17, 10, 6, 4, 13; 1900,



Graph II. Total number of lakes colonized at end of every ten years.

1906 and 1910 were thus maxima. From 1911 to 1916 an average of eight lakes were colonized annually (eleven in 1912); in 1917 and 1918 a drop to two and one respectively,

perhaps due to lack of observation in the later years of the war. In 1919 seven and 1920 twenty-five—the record for any year—was reached. The next four years averaged nine new sites, and in 1925 twenty-four, the second highest figure. Since 1925 the rate of spread has averaged nineteen lakes each year. The cumulative nature of these erratic spreads, with maxima in 1890, 1900, 1906, 1910, 1912, 1920, 1925, is clearly indicated on a five-year period graph, which is almost a perfect curve.

3) Comparison of Counties.

Most counties have not yet reached an optimum density ; there is plenty of room for expansion in the majority. But some, despite uncolonized lakes and favourable conditions, have shown a decrease and have *passed* an optimum period with subsequent (and perhaps temporary) decline. The earliest of these was Notts. in 1907, followed by Northumberland 1912, Beds. 1926, and Hereford *c.* 1929. But at Tring (Herts.) there was a very big optimum in 1884, followed by a decrease of fifty pairs, then a stationary condition, which persists. The only county where the population has been stationary for many years is Leicester, with no appreciable change since 1900, no lakes ever deserted, and the highest young ratio of any county in 1931. Worcester has been stationary since 1927. The remainder have all been erratic and unstable in increase ; Derby, Gloucester, Lincoln, Middlesex, Somerset, Suffolk, Sussex and Warwick are included here. In Salop, Staffs. and Surrey there has been a gradual slow increase for many years, while in Hants., Kent and Lancs. much the same has occurred. Big increases occurred in Northants and Norfolk, lesser ones in eleven other counties during 1931.

IV.—PRESENT NUMBERS.

1) Present Distribution ; the System of Spread.

The present distribution in England and Wales is indicated by a table summarizing data given under counties*, thus :—

				No. of Pairs.	Occupied Sites	Deserted Sites.
				1931.	1931.	1931.
Beds.	...	...	...	18	8	3
Derbs.	...	...	...	37	16	4
Derbys.	...	...	...	13	10	2
Derbys.	...	...	...	—	—	—
Derbys.	...	...	...	78	27	12

* London County north of the Thames is considered as Middlesex, south of the Thames as Surrey and Kent.

		No. of Pairs. 1931.	Occupied Sites. 1931.	Deserted Sites. 1931.
Cornwall	...	—	—	—
Cumberland	...	2-3	2	—
Derby	...	20	15	10
Devon	...	2	2	1
Dorset	...	—	—	—
Durham	...	—	—	—
Essex	...	33	19	6
Gloucs.	...	1	1	1
Hants.	...	24	13	2
Hereford.	...	3	2	3
Herts.	...	34-35	10	1
Hunts.	...	0	0	2
Kent	...	c. 29	10	4
Lancs.	...	14	9	1
Leics.	...	34	12	0
Lincs.	...	27	13	3
Middlesex	...	15	6	4
Monmouth	...	—	—	—
Norfolk	...	c. 202	53	6
Northants.	...	86	22	2
Northumberland	...	1	1	3
Notts.	...	27	13	2
Oxon.	...	15-16	7	5
Rutland	...	1	1	1
Salop	...	48	32	4
Somerset	...	17	5	6
Staffs.	...	59	27	9
Suffolk	...	c. 42	10	4
Surrey	...	47	25	3
Sussex	...	32-33	25	3
Warwick	...	54	31	8
Westmorland	...	1-2	1	1
Wiltshire...	...	21	11	1
Worcs.	...	32	17	3
Yorks.	...	63	24	9
Anglesey	...	1	1	4
Brecon	...	8-10	1	—
Cardigan	...	—	—	—
Carmarthen	...	—	—	—
Carnarvon	...	—	—	1
Denbigh	...	1	1	—
Flint	...	4	2	—
Glamorgan	...	2	1	2
Merioneth	...	2	1	—
Montgomery	...	3	3	—
Pembroke	...	—	—	—
Radnor	...	—	—	1

c. 1155-1162 pairs.

490 sites.

137 sites.

Non-breeders : 347 birds.

Total Population : England and Wales, 1931, c. 2,650 adults.
Scotland, 1931, c. 175 adults.

The 1928 population of Herons (*Ardea c. cinerea*) for England and Wales was about 3,900, as determined by the *British Birds* census. There are no other figures for comparison.

The numerical relationship of different counties is shown on the map. Especially striking is the continuous band of 1-80 pair counties zig-zagging across the map. There is also a definite band of 1-10 pair counties lying west of and outside the better populated counties and shutting off several uninhabited counties from populated ones. In general there has been a westward extension, which continues.

The deserted condition of Cambridge and Huntingdon is curious, especially as both have been inhabited in the past, and both are immediately adjacent to the main concentration. Lack of suitable sites is a factor in both, but pairs may be reasonably expected. This position is made more curious by the colonization of Cambridge for the first time since pre-history during 1932 (as reported to us just before going to press).

The correlation of geology and distribution is close, as shown in the next section.

Comparison of 1930 and 1931, with relation to Recent Decrease, Spread and Apparent Increase.

The variation in number from 1930 to 1931 is instructive as a sidelight on the remarkable instability of an apparently stable and increasing species. Over the whole of England and Wales there was actually a large *decrease* in the total number of pairs breeding in 1931 as compared with 1930. There was a decrease in 13 counties, an increase in 9. Twenty-two lakes were colonized, 29 lakes were deserted, of them sites colonized for an average of 17 years. On other lakes not deserted or colonized for the first time there was a total increase of 43, decrease of 90 pairs. *The result is an overall decrease of 55 pairs in England and Wales*; together 29 counties are involved in the change. A similar decrease has occurred in Scotland. This state of affairs is perhaps surprising. It means that in 1931 the species gave the impression of increasing, because it colonized a number of new localities, whereas in reality it decreased considerably to an extent equal to well over the total population for Wales and south-west England). This might be thought to cause a serious decrease in 1932, but information reaching us before going to press indicates that this is far from being the case, at least two new counties and a number of new lakes have been colonized during 1932. In 1931 new lakes were colonized in Berks. (2); Cumberland, Devon, Hants. (2),

Lancs. (2), Norfolk, Salop (2), Staffs, Surrey (2), Sussex, Westmorland, Warwick (2), Wilts. (1) and Yorks. (3). Lakes were deserted in Beds., Berks., Cheshire, Derby, Devon, Lancs., Lincs. (2), Middlesex (2), Norfolk, Northants (2), Notts. (2), Oxon., Somerset, Staffs. (5), Surrey, Warwick, Westmorland, Wilts., Yorks. (2) and Glamorgan. The maximum increases were seven pairs in Cheshire and four pairs in Warwick; decreases 24 pairs in Northants and 14 pairs in Norfolk. In Devon, Hants., Leicester, Somerset, Middlesex, Staffs., Warwick and Yorks., increase and decrease cancelled out, each counter-balancing the other, so that the final position was no change.

The importance of this instability is considerable. It shows that the meaning of the word "increase" must be seriously modified in its common usage. Clearly this is the case in 1931, for there can be no doubt that, even allowing for error in our figures, there has been a decrease of 50 pairs in England and Wales, and that this has been paralleled in Scotland. It is therefore only possible to consider this "increase" as a spread and to realize that the facts brought to light by the very detailed data obtained in 1930 and 1931 may be of significance throughout animal life—that is to say, that an apparent increase, which (by the very word used) implies an increase in the *total* number of the species in the area or (more usually) in the whole range of its distribution, may not be an increase at all, but only a *spread* outwards to new areas because life in the former centre of distribution has become unfavourable or unbearable. The consideration of this point seems to have been overlooked; it is certainly of vital importance with the Great Crested Grebe at the present time. It would, of course, be absurd to suggest that the species has not in the past experienced a true increase; obviously it has. But at the present time the colonization of new lakes, the spread into new areas, the gradual establishment in south-west England and northern Scotland can be wholly accounted for by the decrease in pairs at old localities with the desertion of other lakes. This explanation can be extended back to explain many colonization in the last few years. For several counties have reached their optimum and had a subsequent decline—Notts as early as 1907. In fact, when the data is critically examined there is no sound evidence for any real increase in Britain since 1925. From 1925 to 1931 about 111 lakes have been colonized, and 61 deserted, but, as in 1931, more important than the actual desertions have been decreases at various lakes; though there

has probably been some increase within limited areas, there can be no doubt that at least 50 per cent. of the apparent increase, probably more than 70 per cent., is due to movements away from already occupied sites. And if we look further we can see the same thing happening ever since 1880. The case of Tring, already referred to, is a classic example ; it is inconceivable that the decrease from 75 pairs (in 1884) down to 25 pairs was due to the death of 50 pairs, and it is only reasonable to suppose that the Tring reservoirs could not support 75 pairs for long, so that many pairs had to move off to new waters. In this way the Tring birds may well have been responsible for the original colonization of southern England, and the dates confirm this possibility. Tring is only one example of similar fluctuations and decreases after an optimum period, one example of a widespread phenomenon which has occurred on lakes in many counties.

In considering the problems involved in these fluctuations, then, we wish to stress the nature of this increase, to make it clear that with recent years there has in reality been a decrease, and that the apparent increase is in the nature of a movement away from previous sites. The reason for such movements we cannot pretend to understand. There appears to be no factual explanation whatever. It is impossible to support such hypotheses as human interference, changes in food supply, climatic variation, and so on, being mainly responsible by any evidence whatever. There is only one influence to which we would draw attention—the possible decrease in available food caused by a pair of Grebes being on a lake all the summer. Under " Food " it has been found that the weight of fish taken from one lake by one breeding pair and young may equal 630 lbs. in one summer, and it may be imagined that after a year or two this could affect the food-supply considerably. It seems possible that this may be vital in determining whether or not the water can permanently support the population that it can carry in especially favourable (*e.g.*, good for fish) years. This hypothesis is a reasonable one, and might explain everything, but more work must be done in cycles generally, and on fish and lake cycles in particular, before the matter can be settled. However, Grebes have flourished for many years on such famous fishing lakes as Gatton, Fritton, Ruislip, Elstree, Frensham and the Broads, and in our opinion the damage done is negligible. For the Grebe serves as a natural check, a link in the ordinary cycle of aquatic life. It keeps down the excess population, controls the numbers, eliminates the margin

of abundance which is so dangerous to the health and success of any population. At least we are certain that human or other external factors cannot be responsible for more than a small part of this curious decrease-spread-increase movement.

(c) **Deserted Sites in connexion with the above.**

It is, then, apparent that a constant desertion of colonized waters has been associated with the recent increase and that this cannot be even mainly explained by obvious influences, interference from Coots, Swans, humans, or anything else. The number of years for which waters were occupied before desertion throws some light on these points. Data is available for 131 out of 137 deserted lakes. These fall into four groups :—

1. *Lakes occupied regularly for a number of years before desertion*—41. The longest known period of a regular breeding before desertion is about 70 years at Hawkstone, Shropshire, which, though it was one of the very few lakes colonized during the massacre period (*i.e.*, in 1864) was only deserted recently, and for no apparent reason. Hemsworth, York, was used for 28 years, from 1893 until 1920; three lakes were used 25 years, and deserted very recently, Rufford (Notts.), 1906-1930; Bowood (Wilts.), 1906-1930; and Osmaston (Derby), 1904-1928. Three others over 15 years are Cuckley Dam (Notts.), 1907-1930; Tittesworth (Staffs.), 1905-1925; Berrington (Hereford), 1912-1929. Of seventeen regular sites deserted recently only two can be explained by obvious influences causing desertion :—

10	were	deserted	in	1931	average	occupation	17.2	years	each.
2	"	"	"	1929	"	"	15	"	"
3	"	"	"	1928	"	"	17	"	"
2	"	"	"	1925	"	"	16	"	"

It is remarkable that until 1925 there were very few records of lakes being occupied for a considerable period, and then deserted, except when vital factors (such as draining off water) were implicated. This suggests that only recently has the desertion factor become much more important. No less than nine regular sites have been deserted in Yorkshire, four in Derby, three in Cheshire, Lincs. and Staffs.; excepting Derby these are all among the first colonized centres.

2. *Lakes used erratically*—26. This group includes those lakes that support pairs occasionally, but apparently not for more than two or three years at a time; between each breeding period there appears to be a lull until breeding can take place again. This seems further evidence in favour

of the possibility that these desertions are partly due to Grebes eating themselves out of a lake—reducing the food supply until it must be left to recuperate before it can again support a pair. Suffolk is the only county where this irregularity is marked; elsewhere it occurs sporadically on individual lakes, as might be expected. Two interesting records are those from Shustoke Reservoir (Warwick), where a pair bred in 1900 and apparently not again till 1920, nor since; and St.-y-Nyll (Glamorgan) one pair in 1894 and in 1916.

3.—*Lakes occupied two years*—11. It is rare for a water to be colonized for two years, and only in Glamorgan has there been more than one "two-year" lake.

4.—*Lakes occupied one year only*—53. Naturally this is the largest class, representing tentative efforts to colonize new and unsuitable sites during waves of spread or increase. The largest number of one-year sites have been five in Derby (which also had four deserted regular sites) and Essex; Warwick has four. In Anglesey three of the four deserted sites were only one-year, the other a two-year. A large number of one-year sites are recent.

These desertions must be considered largely as efforts to colonize rather unfavourable lakes, or as results of reduced food or some other change in environment, due to the activities of the Grebe or to some external factor. The small proportion of two-year sites and the behaviour at erratic ones confirms this effort to extend offshoots in every direction, successful or unsuccessful.

(d) **The Widespread Nature of Increase.**

The obvious increase factor is human protection, but that in itself is not sufficient explanation. The increase was too international wholly to be explained by Acts of Parliament, and the shooting of birds *en masse* continued long after British Acts, in England as on the Continent. The first signs of increase appeared before protection in this country. The increase was due to human protection as the decrease was due to human aggression, in the same way as the late Great War was due to the shooting of an Austrian Archduke. It was all there, all the potentialities for increase on the one hand, war on the other, before the Act which set those potentialities free. The law came at the right moment, it did not cause an increase of Grebes, it permitted it. The species was potentially a numerous one, ready to breed in many areas; human interference was a check on increase, *not* a cause of decrease—

the decrease too had partly occurred before human interference began. Protection came to liberate the fresh spread, which was to last for sixty years at least. No species can ever be made numerous again by protection, which can only help in enabling a species to attain the status it would naturally have without any of the artificial difficulties confronting all animal life in civilized countries since shot-guns, engines and a middle-class were born.

All life has its ups and downs ; insects, mammals, birds, the more we find out about them, the more we realize the universal irregularity of things. All the time, under our eyes, gradual changes are taking place, long and short scale fluctuations of every sort, often superficially correlated with an obvious factor, nearly always found to be dependent on something more fundamental when a deeper examination pierces the soft shell of easy explanations. The up period was a natural one, and time will show if (as indeed seems inevitable) the down period will follow, the cycle carry on. The reason for animal cycles we do not know ; nor, at present, does any person.

(e) Factors Controlling Present Distribution and Increase.

The distribution and increase of the Great Crested Grebe is at present mainly limited and controlled by eight factors—food, depth, geology, cover, human interference, territory, climate and enemies. The complexity of the varying degree in which these operate and overlap makes the task of analysing the respective importance of each a difficult one.

1. *Food Supply.* The most obvious limitation is that of food supply. Shortage of food, scarcity of fish, absence of newts and water beetles—clearly these must be the chief obstacle to colonization of localities. But is it quite so obvious? Not only is there hardly a water over three acres in England which has not ample food, but also the Great Crested Grebe has shown itself capable of adaptation to peculiar food conditions to a remarkable extent. In the absence of other foods it can thrive on small crustaceans, and has done so with astonishing success at 14,900 feet in Tibet (see “Colonial Nesting”). Indeed it appears that the absence of fish is no barrier at all, though where there are fish they become the staple diet. In Britain, at any rate, food is probably in itself a comparatively insignificant factor in distribution control, for there is nearly always plenty. Only when correlated with depth does food become a serious problem.

2. *Depth.* Depth is probably a factor of great importance. There is a definite limit, probably about 15 feet, to the efficient feeding of this species ; something less than 10 feet is the ideal. Deep lakes are geologically characteristic of igneous, volcanic areas, which compose Scotland and Wales ; shallow lakes are a feature of sedimentary districts, which compose the greater part of England. The characteristic igneous deep lake shelves rapidly and has a stony floor ; it is thus unsuitable for much vegetation, and so tends to have a scanty and limited small fauna, which in turn affects the numbers of fish. Therefore this type of deep lake is unfavourable to Grebes, indirectly through food as well as directly (and more vitally) through the mechanical difficulties of feeding in deep water. Often these lakes have, at one end, a shallow run-out with some cover, and these are the places chiefly frequented if and when Grebes do nest. Naturally there are shallow igneous and deep sedimentary lakes and actually Grebes also nest on some deep lakes. But, in general, this depth control exercises a profound influence. In Sussex, Surrey, Herts., Gloucester and elsewhere there is commonly found a type of deep valley lake surrounded by trees with high acidity and no cover ; this type of lake is also very unsuitable for Grebes. The position on artificial reservoirs is rather different ; they may be deep but are usually very favourable to microscopic and fish life ; the birds are not breeding, so that they can feed anywhere, and there are no territorial complications. There is an obvious correlation between uniformly shallow waters—such as Fritton, Fairburn, Stanford and the Broads—and dense populations ; the available feeding area is increased, the quantity of vegetation and food tends to be much greater. Grebes will thrive on lakes three to four feet deep.

3. *Geology.* Several important results of geological formations are described above. The widespread effect of these is easily seen when it is realized that in England and Wales 30 pairs breed on pre-carboniferous, 1,100 on carboniferous and later formations. Yet a quarter of the country, including Wales, is pre-carboniferous. The main population is centred on the areas geologically known as the Eastern Plain and the Cheshire Plain, the two ancient Grebe centres. Since 1880 large numbers have spread over the Plain of York, the Central Plain and the Central Lowlands of Scotland. By far the greatest numbers nest on the Keuper Marls and Sandstones of the Trias, which cover most of Cheshire, Worcester, Warwick, Leicester, Stafford, Derby and Notts., as well as part of Lancashire, Yorkshire, Devon and Somerset. The Eocene

and Oligocene Deposits of Middlesex, Berkshire, Essex, Herts. and south Hampshire hold a fair number. The cretaceous deposits, which compose most of south-east England, and form an irregular thin strip from the Wash to Lyme Regis, are important for Grebes, particularly as they abut against the chalk. For chalkland is generally quite unfavourable, mainly owing to its efficient drainage and lack of surface water; Grebes nesting on the central chalk strip of eastern England are, almost without exception, to be found on artificial lakes or in river valleys and old river beds with a thick layer of secondary sedimentary deposit forming the lake floor. The same to a lesser extent is true of the Jurassic Oolite strip running south-west from the Cleveland Hills to Portland Bill.

In all these cases it is, of course, not the actual nature of the formation, but the effects of that formation upon drainage, vegetation, depth and so on, which affect the Grebe. But indirectly geology is of great importance in determining the distribution.

4. *Cover.* The amount of cover is largely determined by the geological formation and depth, as described above. Some sort of anchorage is essential for the Grebe's nest, but within recent years the advance made in anchorage technique has been great. Nests are now built in places (as described under "Nests") which would have been unbelievable to naturalists of the last century. At Hawley (Hants.), Dowdeswell and Frampton (Glos.), persistent efforts to nest have failed through the complete absence of anchorage (the banks being built up), but Grebes continue there, courageous as ever. On the London reservoirs nests have been made on top of concrete banks. It would be quite unsafe to say that any lake was impossible because of insufficient cover, though many of the deep lakes in Wales and the Lake District seem very unsuitable in this respect, as are many of the hill lakes in Yorkshire, Lancashire, Northumberland, Durham and elsewhere. Here it is not only a question of nesting but also of the bleak, exposed localities subject to heavy rain, mist and wind. Cover for nests remains an important factor in increase and colonization, but very unfavourable nest conditions may be overcome if the other conditions are very favourable.

5. *Climate.* The importance of climate in determining distribution is uncertain. But one conspicuous point is that the present distribution of the Great Crested Grebe corresponds very closely with the mean rainfall, as shown on an average rainfall map. This, of course, also corresponds with the

mountain ranges of pre-carboniferous origin, so that the two factors are not entirely separate. But rainfall may affect the few really favourable mountain lakes (chiefly shallow tarns in deposit basins). When it is remembered that the mean rainfall in Snowdonia and part of the Lake District is over 100 inches, and most of North Wales has over 80 inches, whereas Norfolk gets less than 25 inches, the possible importance of rainfall becomes apparent. But average summer rainfall is very low. Rainfall may be important in other ways, especially through causing floods in the midlands, and changing the water level in reservoirs and lakes. Temperature is correlated with height and latitude; there is no apparent correlation between Grebe distribution and temperature in Britain.

6. *Human Interference.* In the past man has been a great factor in controlling distribution. Since 1880 his influence has decreased, but now the big increase in "hiking", public angling and boating is re-introducing the human factor once more. The main influence of man is through anglers and egg hunters (see "Mortality"), but these seldom prevent Grebes from colonizing lakes, nor drive them away once they have arrived, though in Northants anglers have done a lot of damage. Boating is the only thing, short of direct interference, which really disturbs the Grebes. They are curiously alarmed by boats of any sort; one rowing boat on a lake may upset them to an extraordinary degree. Two or three boats are far worse than fifty bathers; indeed they do not seem to mind people bathing, camping or "hiking" all around the lake. The increase of boating in Cheshire, Shropshire, Suffolk, Lincoln, Middlesex and elsewhere (15 lakes in all) has therefore caused decrease or desertion at several sites, and the introduction of speed-boats on several large lakes around London has had an even greater effect. Yet on the Broads boats are everywhere, Grebes numerous. Probably they have got used to them there; at least they can move about in small channels and unlimited cover. Railways, roads, houses, do not seem to touch their consciousness. They revel in orange peel and noise. Several flourishing Grebe localities are small ponds surrounded by railway lines, notably Seven Arches (Surrey), which derives its name from the railway arches and lines which surround it on every side, so that the lake is enclosed by railways; it is also much frequented by picnic parties from the adjacent river. Houses overlooking the water do not seem to matter in the least, Agecroft (Lancs.) being a classic in this respect. Feltham Gravel Pit (Middlesex), a small pool formed

only a few years ago, has the especial attraction of anglers, railway *and* houses ; four pairs bred in 1931. From this it will be clear that Grebes take human life for granted, except when it rushes at them in boats, or directly interferes with them, with guns or collecting boxes. The indirect effects of man, by neglecting to cut weeds, pollution, draining lakes, etc., are erratic factors, almost insignificant ; they are considered under "Mortality". The introduction of Swans, Canada Geese and ducks to many lakes has had an important effect in checking the increase on about forty lakes, which are discussed under "Relations".

7. *Territory*. The importance of territory in determining the spread and distribution of the species is fully discussed elsewhere. Here it is only necessary to mention that territory acts as a safety valve against over-population and is responsible for spread outwards from populated areas. Under pressure or optimum conditions territory may break down and cease to be conspicuous or important. When this occurs spread and fresh colonization is actually held up, as increased numbers can stay on occupied lakes, and are not compelled to find fresh localities.

8. *Enemies*. The effect of constant interference from some enemy may prevent colonization in some cases. In Northumberland otters stopped Grebes from nesting on several waters ; in a few cases pike ; Coot in Somerset ; hand-reared Mallard have occasionally had a similar effect. But on the whole these are minor obstacles to colonization, and pairs will breed year after year on lakes where young are seldom or never reared.

(f) Relative Importance of these Factors.

From the above considerations it would appear that the Great Crested Grebe is able to overcome almost any difficulty under pressure of numbers, which force birds to attempt new localities in new areas. It is not possible to correlate present distribution with any special food species, reeds for nest cover, lake formations, human interference, or absence of certain other species. In the absence of favourite food, cover and other such items, almost anything may be used. But at present there is some correlation with lake size ; in the last few years this too has become uncertain, since Grebes have nested on mere ponds in several counties, and show every prospect of spreading to even smaller ones in the near future.

It is difficult to imagine a Great Crested Grebe's nest on a pool in the middle of the village green ; we dare not say that the idea is absurd. The only real restriction on breeding sites is the mechanical and topographical one of depth, but the importance of this as a barrier to colonization is not to be treated too high. Rainfall and exposure may also be important in high country. We must be satisfied at present to say that the Grebe seems able to overcome any reasonable difficulty, so long as there is some sort of food supply and nest anchorage. The future should answer the interesting questions involved in these considerations.

V.—OTHER POPULATION PROBLEMS.

(a) Non-Breeders.

Non-breeding birds were observed in nineteen counties during 1931 :—

County.	Approximate Number.					
Northampton	45
Cheshire	38
Hertford	35
Middlesex	34
Essex	31
Surrey	25
Stafford	24
Nottingham	21
Derby	18
Lincoln	18
Norfolk	16
Worcester	12
Hampshire	9
Warwick	7
Somerset	5
Berkshire	5
Cambridge	2
Yorkshire	2
Total						347

The total non-breeding population in June, 1931, was probably 350. Tring and Lea Valley Reservoirs lead the list of individual waters, with 34 and about 30 non-breeders respectively. Other localities with large numbers are Tatton and Rostherne Meres (Cheshire), Molesey, Barn Elms, Littleton and Staines Reservoirs (near London). Six others have ten or more, Butterley (Derby), Denton (Lincs.), Sulby and

Naseby (Northants.), Mansfield (Notts.) and Upper Bittel (Worcs.); *all* these are reservoirs.

It is evident that artificial waters with artificial banks and no cover make it very difficult for pairs to breed, and thus become especially suitable for groups of birds with no inclination to breed. Under such conditions there is ample food and no territorial trouble with breeding pairs, and in this connexion the concentration of non-breeders on the Startops End Reservoir at Tring is notable. At Tatton, Rostherne, Lea Valley and Stanford there are also considerable numbers of breeding pairs, but all are very large waters with enormous food supplies.

There are several 1931 records of adults at sea during the summer. Individuals were noted in the Solent (where they have been seen paired and courting in late May, 1927), off Blakeney and Scolt Head (Norfolk), around the Wirral Peninsula (Lancs.), behaving as if paired, and at Dungeness (Kent) single birds.

We regret that no non-breeders were pathologically examined for gonad conditions, etc.; the legal status and the furious suspicions aroused in certain (as we believe misguided) quarters by any mention of dead birds examined decided us—as a matter of policy—against handling any dead birds (whatever the cause of death) during the course of the enquiry. It is quite possible that many non-breeders are birds hatched in the previous summer.

(b) **Distribution at Sea.**

As stated elsewhere, the greater number of Great Crested Grebes take to the sea in the winter, or at least from December to February. The distribution of these is somewhat limited. Very few winter in south-west England, off the coasts of Dorset, Devon, Cornwall and Somerset, and they are rare in the Bristol Channel. Not until Pembroke do birds appear, and there they are winter visitors in small numbers only, frequenting Fishguard Harbour in particular. Further north in Wales they become more numerous, being quite numerous in Carnarvonshire, sometimes abundant off Denbigh. Probably the whole migratory population of Cheshire, Shropshire and Stafford and adjacent counties (about 600 birds in late autumn) frequent this area, where the Dee and Mersey join the Irish Sea. Some occur further north up to the Border. On the east coast there has been a big increase lately in the numbers on the sea off Northumberland and there are always a fair number

around Yorkshire; good numbers along the Lincoln and Norfolk coasts. But Suffolk, Essex and the eastern coast-line of Kent hold very few. On the south coast small numbers favour Dungeness and the Solent, but they are rather uncommon elsewhere, including the Sussex shore-line.

In fact it is curious that there appears to be a general *northward* movement in late autumn, to the Northumberland coast, the Wash and the arm of the sea between Denbigh and Lancashire. In proportion to the numbers in these areas, there are hardly any in the Thames, Bristol Channel, Solent and Cardigan areas. That there should be such a movement—and the evidence seems good—is something of a surprise. The greater part of the breeding population occupies the counties south of these wintering stations; under 200 pairs nest north of a line from the Wash to the Dee. Nor is the Wash more sheltered than the Thames, the Dee than the Severn; the Northumberland coast is very exposed indeed.

This northward tendency has been noted in some other migrants, and is probably much more widespread than is at present imagined. But for a species adversely affected by cold and by rough seas to go northward seems—to say the least of it—strange. Perhaps there may be some food-supply problem involved, and it is possible that there is a tendency to go north-eastward similar to that recently proved by marking Razorbills.

We know only two records of Grebes away from the coast-line and there is so far no evidence of migration to other countries. It seems that these coastal birds are perhaps 95 per cent. British.

One of these records is from the Atlantic. The other refers to March 3rd, 1929, when T. H. McKittrick found many Grebes in one patch of sea off the Ruytingen Light, 13 miles from France and 31 miles from England, in $2\frac{1}{2}$ to 9 fathoms, and during a very cold spell. It is important to note that north European birds are partly migratory and are said to winter in the Mediterranean, northern India and Africa. Some of these may perhaps affect our shores.

(c) **Migrations.**

The Great Crested Grebe is almost wholly resident within the British Isles, but a summer-visitor, winter-visitor and passage-migrant to different parts of the country.

(1) *As Summer-Resident.*—To the majority of breeding waters they are summer-visitors only, although even in

Scotland they stay in some localities all the year round, given an open winter.

The birds begin to arrive in February or March—occasionally earlier—January 23rd, 1931, at Chevet Park, Yorks. (D. B. Kirke)—depending perhaps on the weather. Latitude would appear to have little effect, for a bird was back on Bardowie Loch, Stirling, by February 9th, 1931 (J. Bartholomew), although at Kindar Loch, Kirkcudbright, they arrive about the end of April (A. Mills). They are often driven off their breeding waters by ice in early spring, but return rapidly when the thaw comes. For instance, at Moseley Reservoir, Surrey, there were 60 odd Grebes on March 7th, 1931; there was a cold snap during the following week which froze over the breeding waters in the neighbourhood, and on March 11th the numbers of Grebes at the reservoir, large areas of which remained unfrozen, had risen to over 90, but by March 14th the thaw had come, and the numbers had fallen again to little over 60. Numbers are present off the Pembroke coast from December to February and they are paired and courting before they leave. At Fairburn, Yorks., during seven years the arrival dates varied from February 3rd to March 18th. One of the pair often arrives on the breeding water some weeks in advance of its mate, and this has particularly been noted in Herts., Essex and Surrey.

(2) *As Spring-Migrant*.—On the larger breeding waters the spring influx reaches a climax in the second half of March or the first half of April, when there are often more birds present than eventually breed there. On midland reservoirs there are five or ten times the breeding population in April. But on the large reservoirs in the Lower Thames Valley, with no cover for nesting, the number of Grebes gradually dwindles throughout the winter, and reaches its lowest ebb in April or May. In the Upper Thames Valley, where there are no large reservoirs, there are only one or two records of birds on the river in the spring, whereas there are quite a number for the period August to October.

(3) *As Mid-Summer Migrant*.—The first spring migration takes place chiefly in March to April, but further well-defined movements continue throughout May into June.

On the west coast—in May off Llandudno, nearly 50 together on May 18th off Llanfairfechan, all through May in Derbyhaven Bay (Isle of Man), May 6th and 21st in Dovey

Estuary (Merioneth), May 12th (1891) in mid-Atlantic. On the south coast, in Southampton Water and the Solent during May. Off Dungeness several on passage in early May. Off Holy Island and Northumberland there has recently been a big increase in migrants, some of which are present through May until June. In Fifeshire they occur in May on many small waters quite unsuitable for nesting (Dr. Wilson). One was on passage in May on Lairds Loch, Angus. G. C. S. Ingram summarizes spring migration in South Wales as a slight influx in February, a lull in March, and larger numbers arrive in April and May.

There are several May and June records from the London parks.

We have received notes of birds, in addition to the established breeding stock, appearing on fourteen waters in Berks., Bucks., Oxon., Surrey and Sussex between the end of April and mid-June. Similar occurrences have also been noted in Herts. (Elstree and Bonnington). The length of the stay and the late date of departure in some instances, such as at Sunninghill Park, suggests that the movement is not only passage, which in many species is of a hurried nature. The fact that the birds on Southampton Water in May were in pairs and courting goes against the idea that all these late spring movements are merely the wanderings of non-breeding or unmated birds. Too much importance, however, should not be attached to courting, as this may be observed in almost every month of the year, including December, and is perhaps not so closely connected with breeding as might be supposed.

Towards the end of June in some years the numbers begin to increase at the reservoirs, as some of the birds which have been disappointed in nesting leave the breeding waters. At Woburn Park all the Grebes had left by the end of June, 1931. A Grebe was on the Wye at Whitney by June 30th, 1931. At Rostherne Mere, Cheshire, there was an influx on June 28th, perhaps part of the late spring movement, while five more were seen on July 10th and fifteen more on July 29th. These last are undoubtedly the beginnings of the autumn move (T. A. Coward). Thus throughout the whole spring, summer and autumn, Great Crested Grebes are on the move, overlapping in to and fro migrations, so that there is no final distinction between spring and autumn movements. Always the population is in a state of flux even at its most stable period in late June.

(4) *As Autumn Migrant*.—The numbers on the non-breeding waters, in the Thames Valley at any rate, gradually increase throughout July, although birds do not usually appear on the sea before August. August 6th was the earliest autumn date off the Fifeshire coast in 1930, and for the Isle of Man August 25th, 1929, is a very early date (Col. Madoc). By far the biggest movement occurs in mid-October when the last wave of breeding birds move from their nesting sites, though a few stay on through November and December, and some stay all the winter. There is evidence to suggest that sometimes the parents and young migrate together. D. Gunn has seen adults feeding young at Staines Reservoir, where none bred, and a few similar reports come from other lakes.

Below is given the approximate combined total of Grebes on the three important reservoir groups in the Lower Thames Valley—Staines, Molesey and Barn Elms (received from the London Nat. Hist. Soc.)—to show the autumn movement in the area in 1931:—

1931	...	...	Apr.		June		July		Aug.
Date	...	...	1		15		1 15		1 15
No.	...	...	31		40		66 73		118 158
1931	...	...	Sept.		Oct.		Nov.		Dec.
Date	...	...	1 15		1 15		1 15		1 15
No.	...	...	196 241		275 360		288 233		189 134

At Staines in 1930 there was a considerable influx in the last week of July, reaching a peak with 175 on August 15th, after which numbers slowly fell away to 90 on September 23rd (T.H.H.).

(5) *As Winter Resident*.—In all southern counties and most others the species is almost entirely absent in winter. Only exceptionally do birds winter in Notts., Derby, Worcester and Yorks. A few stay on in Cheshire, Staffs., Norfolk, Warwick, etc. The total inland population during January is probably not more than 500, of which the majority are on the reservoirs (especially in the London area) where they do not breed—so that these birds are not really resident at all. The actual number of lakes upon which pairs stay all the year round is only about fifty, and at these only a small percentage of the total population remains, the rest being migratory. There seems, however, to be an increasing tendency to winter. Eighty per cent. of the population spends the winter at sea.

some may migrate to other countries, though not to any very large extent ; there is no evidence of such migration, and Grebes are very rare at more than a few hundred yards off shore.

The curious marine movements are discussed under " Distribution at Sea ".

BREEDING OF THE REDWING IN SCOTLAND.

BY

A. H. DAUKES.

A PAIR of Redwings (*Turdus musicus*) bred this year (1932) in the Moray Faunal Area. As this appears to be the first authenticated case of the breeding of the Redwing in any part of the British Islands, a detailed account may be of interest.

I was informed that the bird had first been heard singing on April 14th, from which date it was continuously heard with occasional intervals. No trace, however, of a second bird could be found.

On June 7th I found the male feeding in some open ground where he had previously been heard singing. I watched him for about two hours, at the end of which time the female suddenly appeared. The two birds fed on the ground for over an hour and occasionally flew into some of the scattered trees in the vicinity. Once or twice the female flew into the beech tree under which I was sitting and at the same time uttered a very loud and sharp metallic note.

Later on the same day I again visited the spot, accompanied on this occasion by four other observers, and from a different position again watched both birds feeding on the ground. They appeared to be anxious and both approached to within twenty yards, at which distance it was possible (thanks to an excellent light) to see every detail of the plumage.

After behaving in this manner for about half an hour, the female flew into the solitary beech tree twenty yards further away (under which I had been sitting on the previous occasion) and at the same time made a loud rattling note. The tree was examined and the nest, which contained six eggs, was immediately found. It was at a height of about 12 feet from the ground and was built close against the main trunk in a kind of cup where a small branch left the main stem; it was very exposed and appeared to consist entirely of dead grasses. The eggs resembled those of the Blackbird, but were considerably smaller.

The next day (June 8th) we took up our position at a spot about 25 yards from the tree, from where it was possible to obtain an uninterrupted view of the nest and of the sitting bird. At this distance the white eye-stripe was very clearly distinguishable and the upper part of the red on the flanks could be easily seen. We watched the birds at intervals during the day.

The following day (June 9th) we visited the spot again at about 9 a.m. The bird was not sitting, but the male returned in a few minutes and settled on the nest. We watched the birds several times during the day and noticed that both birds incubated, although there did not appear to be any definite period when the cock took over from the hen.

On the third day after the nest had been found I visited the place again about 9.30 a.m. The bird was not sitting and as she did not return in half an hour I climbed up to the nest and found that it had been robbed—in all probability by a Rook, as some of the lining of the nest had been pulled out. After a considerable search I was successful in finding on the ground the greater part of one egg, which has been preserved together with the nest.

The nest is of peculiar construction and differs in several ways from those of the Blackbird or Thrush. The outer part consists entirely of dead grasses, inside which there is a thin but strong lining of pure mud, unmixed with any fragments of wood. There is then a final lining of grass. It is considerably smaller than the nests of the Blackbird or Thrush and, although very light, is extremely strong, owing to the lining of mud, which is quite hard and baked.

The breeding ground is about 700 ft. above sea-level and consists of open rough grassland with boggy patches and cattered trees, principally beech, birch, larch and spruce.

The coloration of these birds in the breeding-season was much brighter than that of winter; the red on the flanks was more vivid and had the appearance of extending lower; the white stripe above the eye was very conspicuous and by contrast with the dark lores gave the bird the appearance of having a black stripe through the eye and another white stripe below the eye; there was a conspicuous dark patch on each side of the throat. The beak was dark brown; the lower mandible was yellowish with a dark tip.

In the case of this particular pair of birds the male was easily distinguishable from the female: he was slightly darker on the back, the markings on the head and throat were rather more clearly defined, while the red on his flanks was brighter and had the appearance of extending over a somewhat larger area.

As regards notes:—

A.—The song of the male, which was much inferior to that of the Song-Thrush, consisted of a few flute-like notes which I syllablized as "*Hee. Tew, tew, tew, tew,*" a single note followed by three (sometimes four) lower and

quicker notes and a fourth (or fifth as the case might be) about a further half tone lower. These notes were followed by a low, quick warble, not audible at more than about forty yards, and resembling a mixture of the song of the Common Whitethroat and the last notes of the song of the Swallow. The commencing flute-like notes were audible at a considerable distance and when the initial "*Hee*" was omitted, as was sometimes the case, or was inaudible owing to distance, were rather reminiscent of the winter "*tschoo, tschoo, tschoo, tschoo*" of the Greenshank. The song was somewhat monotonous and had rather a melancholy tone. As in the case of many other birds, the whole song was occasionally delivered *sotte voce* so as to be inaudible beyond thirty-five yards. The bird usually sang from the topmost branch of a tree, but occasionally from the ground.

B.—The alarm note was a sharp metallic rattle rather like the rattle of the Wren, but stronger; it was quite distinct from the alarm note of the Mistle-Thrush.

C.—The call note—"see *ip*"—is so well known in winter as to require no further description.

During the latter part of the day upon which the nest was robbed, the male bird sang with greatly increased frequency and fervour and continued to do so with diminishing intensity and with some intervals until June 20th, after which no further song or call was heard, nor could the birds be seen. It is possible that they have nested again.

There is reason to think that a bird of the species was present on the same spot and singing during the springs of 1930 and 1931, but it is not known whether it was one of a pair, nor was any nest found.

[Mr. Daukes is such a careful observer and his notes are so good and thorough that no confirmation of his interesting record is necessary, but as I have, by the kindness of all those concerned, been able to make a thorough investigation of the case, it is as well to put this on record and state that I am perfectly satisfied as to its authenticity.

The nest was submitted to Mr. Jourdain without any details as to its origin and he reports as follows: "It has the appearance of a nest rushed up at short notice (as in the case of a bird about to lay whose first nest had been destroyed). In size it is decidedly smaller than the average Blackbird's nest, diameter of cup $3\frac{1}{4}$ to $3\frac{3}{8}$ in., and agrees better with that of the Redwing. The site of the nest appears to have been very cramped. The fragments of eggs are not sufficient to decide whether they are those of Blackbird, Fieldfare or Redwing, but belong to one of the three."—H.F.W.]

NOTES

PROBABLE WATER-PIPIT IN STAFFORDSHIRE.

ON March 31st, 1932, I found a strange Pipit at the edge of a shallow pool situated amongst derelict pit-mounds in Tipton. Compared with the Meadow-Pipit (*Anthus pratensis*) the chief distinctions were, a somewhat higher pitch of the note on rising and not quite so sharp in tone at the finish, greyer appearance both of upper and under-parts. The latter were unstreaked except for a few marks on the breast and there was none of the rich tints usually found on the flanks of Meadow-Pipits. In flight the tail, which had the outer feathers white, was distinctly longer than a Meadow-Pipit's, showing quite as much difference in this respect as that between the Sky- and Wood-Larks. I was unable to note the colour of the legs. Mr. H. G. Alexander agrees with me that it was probably a Water-Pipit (*A. s. spinoletta*). F. FINCHER.

SPOTTED FLYCATCHER WITH SECOND BROOD.

CONSIDERING the lateness in the nesting of the Spotted Flycatcher (*Muscicapa s. striata*) one is led to think that a second brood is not at all frequent. During the present year one pair reared young behind the barge-board in the gable of my house at Dowles, Worcestershire, and another pair at the same time in a vent hole of the hayloft within 25 yards distance—which is a very close vicinity for the territory of two pairs of these birds. The latter pair within a few days of the young flying nested again in a similar site within 9 feet of the first position. Mr. Chas. Oldham writes to me that a second brood was also reported to him this year reared in a Berkhamsted garden in Hertfordshire. J. S. ELLIOTT.

[Second broods of Spotted Flycatchers are not usual, but the fact is well known.—F.C.R.J.]

REED-WARBLER'S SECOND BROOD.

It may be of interest to note that on June 19th, 1932, in Suffolk, I found young Reed-Warblers (*Acrocephalus s. scirpaceus*) which had left the nest and, from their appearance, I should imagine that they had been out for a couple of days. The old birds, of which there was only one pair in this locality, had already built another nest, and laid one egg. Second broods are, I understand, quite exceptional. H. J. K. BURNE.

[The fact that only one pair of birds was present in the above

locality makes this a quite definite record, though second broods have previously been recorded, mostly on strong presumptive evidence by several observers; see *A History of the Birds of Kent*, p. 56, and *B.B.*, XII., pp. 236, 278.—EDS.]

YOUNG CUCKOO FED BY WREN AND HEDGE-SPARROW.

ON July 23rd, 1932, while watching the movements of a fully-fledged young Cuckoo (*Cuculus canorus*) in an undergrowth of small hawthorns and brambles, I saw the bird being repeatedly fed both by a Wren (*Troglodytes troglodytes*) and a Hedge-Sparrow (*Prunella modularis*).

The Hedge-Sparrow was absent for much longer periods than the Wren, and each time alighted upon the Cuckoo's neck in delivering the food. Its smaller and more agile assistant, however, sometimes hovered, but more often clung to the overhanging bramble stems, to reach the gaping mouth.

The Cuckoo called incessantly with a high-pitched squeak whenever its foster-parents were in sight.

KENNETH R. ASHBY.

[A fair number of cases are on record of young Cuckoos being fed by birds other than the actual foster-parents, but the details given by Mr. Ashby have some interest.—EDS.]

OSPREY IN LANCASHIRE.

ON August 1st, 1932, I saw an Osprey (*Pandion haliaetus*) fishing on the River Lune at a point where the River Greta joins the Lune—roughly on the boundary line between the parishes of Tunstall and Arkholme. W. PAGET-TOMLINSON.

POCHARD AND OTHER DUCK NESTING IN CHESHIRE.

DURING the last twenty years Pochards (*Nyroca f. ferina*) have often been seen in Cheshire at irregular intervals during the summer months: frequently in small groups in June and July, and occasionally (as in Delamere Forest in July, 1925) a single drake has occupied a water in such a way as to suggest that a duck was sitting in the neighbourhood.

A small mere in the south of the county was enlarged to form a reservoir some seven years ago and formed an area eminently suited for breeding birds. During 1931 about twenty Pochards remained there throughout the summer, but no young were seen. Again, in the summer of 1932 several were present, but it was not until July 10th that actual proof of their breeding there was established. On that day my wife

and I saw a duck followed by five youngsters, and on July 23rd saw the drake, which was not visible on the earlier date.

Tufted Ducks (*Nyroca fuligula*) have nested in Cheshire since 1908, but have not increased on some waters since that date. However, on the mere mentioned above (a water of about 22 acres) they nest in some numbers : in 1931 I saw six ducks with separate broods and another also with young on a smaller pool and a few yards from the main one, and in 1932 I saw at least seven broods.

On July 10th I twice watched one of the ducks carrying a young one on its back ; though this may be a normal habit, I do not remember to have noticed it before.

In no case was there a larger number than eight in any brood, though I counted as many as twelve with one duck on a Staffordshire reservoir this year.

The Garganey (*Anas querquedula*) has been seen in Cheshire in spring more often in recent years than was formerly the case, and also occasionally in July and August.

In addition to occurrences already recorded in *British Birds* (III., p. 414, 1910 ; XVI., pp. 24-25, 1922 ; XVII., p. 86, 1923 ; XX., pp. 297-298, 1927 ; XXII., p. 143, 1928) four were seen on meres near Northwich from April 4th to April 6th, 1931, and they have been shown to occur with some regularity in Staffordshire. Until 1932, however, none had been noticed in June. On June 2nd I put up a pair from the end of a shallow, secluded, mere in Arley Park. When I visited the locality again on June 18th I found that the main pool had practically dried up and the only water remaining was a narrow stream running through the centre of the mud. The drake Garganey was still there, however, standing very alert well out on the mud, and though a search failed to disclose the duck it certainly seems probable that she was sitting in the grass of the park that runs down to the mere. That the mere should have run dry is disappointing and they have not been seen since.

A. W. BOYD.

AVOCETS IN HANTS.

ON the afternoon of March 31st, 1932, a single Avocet (*Recurvirostra avosetta*) was seen by Mr. S. D. Barfoot, of Christchurch, feeding on the shore near the end of Stanpit Marshes in Christchurch Harbour, together with Black-headed Gulls (*L. ridibundus*). He watched it for about half an hour, when, as the tide rose, it flew away and was not seen again.

F. C. R. JOURDAIN.

ON June 9th, 1932, when walking on a marsh on the Solent, I saw an Avocet (*Recurvirostra avosetta*) which rose from a shallow mere close by and flew on to the ooze; it came to rest 150 yards away, standing quite still for some minutes. It then returned to the mere and walked about, probing the bottom with its bill. I watched it through my glasses for about an hour on the mere and also on the grass surrounding it. A Lapwing stooped at it and the Avocet again took to flight to the mud of the Solent but shortly returned to its original spot. On the following day it was at the same place. The only recent record of an Avocet in Hants. appears to be one near Beaulieu in May, 1927 (Vol. XXI., p. 182).

J. B. WATSON.

[An Avocet was also seen on the south coast at the Sussex-Kent boundary on June 17th and 18th.—N.F.T.]

BLACK TERN AND LITTLE GULL IN CUMBERLAND.

ON May 15th, 1932, an adult Black Tern (*Chlidonias n. niger*) and an immature Little Gull (*Larus minutus*) were breaking their journey at a small fell-foot tarn which lies ten miles east of Carlisle and is colonized by Black-headed Gulls. The migrants were detected at seven in the evening, having arrived since the gullery was inspected in the morning. Both birds were frequently within ten yards range, the Black Tern in particular favouring the open end of the tarn over which it continued to hawk flies, occasionally dipping at the surface of the water.

The distinctive features of the Little Gull were the dark crown and white forehead; the dark-banded wings and the slightly forked tail with its black terminal bar.

While the occurrence of the Little Gull may be regarded as exceptional, records show that the Black Tern may have followed a definite western route.

ERNEST BLEZARD.

FOOD OF THE SPOTTED FLYCATCHER.—Miss M. Barclay informs us that she saw a Spotted Flycatcher (*Muscicapa s. striata*) pick up a medium-sized earthworm and devour it at Woodhall Spa, Lincolnshire, on July 28th, 1932. In the *Practical Handbook* (I., p. 286) the bird is stated to have taken earthworms in hard weather on the authority of J. E. Palmer (*Zool.*, 1886, p. 295) in co. Kildare. Mr. C. Oakes also saw young Flycatchers being fed by both parents on July 31st, 1932, at Mytton, Lancs., on wasps, of which there was a nest close by. As mentioned by Mr. Oakes, this

habit has already been recorded by Mr. J. H. Owen (*B.B.*, Vol. VIII., p. 115), and is probably not very unusual, for Mr. R. Newstead by post-mortem examinations of four birds detected the presence of Hymenoptera (*Bombus* sp., *Vespa vulgaris* and *Vespa* sp.?). Mr. Oakes also notes that a sac containing faeces, which had been accidentally dropped by one of the parents within three yards of the nest, was picked up again and removed to a distance.

SWALLOW'S NEST WITH EIGHT EGGS.—Mr. J. A. Sweetlove writes that on June 12th, 1932, he found a nest of *Hirundo r. rustica* at Acklington, Northumberland, containing eight almost fresh eggs, apparently all the product of one female. Nests with eight young have been recorded in Vol. IX., p. 71, and Vol. XII., p. 91.

These appear to be the only recorded cases from Great Britain, but Mr. C. H. Gowland mentions a nest with eight young in south Spain in 1926. This is interesting in view of the fact that nearly all the large clutches of seven and eight recorded from England come from the northern counties.

OSPREY IN NORFOLK.—Mr. E. F. Ladds informs us that on May 16th, 1932, he watched an Osprey (*Pandion haliaetus*) at Thornham, Norfolk. The bird stayed, hovering over a freshwater lake near the beach, for about a quarter of an hour, and its large size, white crest and green feet were particularly noticeable. All the time it was in the vicinity it was attacked by a Heron, a crowd of Terns, and a Carrion-Crow which had nest and young in the neighbourhood.

LETTERS.

NOTES AND BEHAVIOUR OF GREEN SANDPIPER.

To the Editors of BRITISH BIRDS.

SIRS,—I have been much interested in Messrs. Ingram and Salmon's note (*antea*, p. 41) on this subject, and I venture to add the following comments.

My experience, in Romney Marsh, in inland parts of Kent and by Midland reservoirs, confirms their observations that the Green Sandpiper (*Tringa ochropus*), when flushed from a marsh-ditch or pool, not infrequently goes off quite silently over the water, to settle not far away; sometimes, too, it goes up and away silently. On other occasions, and perhaps more frequently, especially if the observer comes upon it suddenly, it goes off and up with an intense clamour, which subsides into the normal three-note cry as it gets well up into the air. The sharper "wit, wit" or "pip, pip" I have heard much less frequently, and the rippling "klu-ludle-lu-ludle," etc. (as syllabled by Messrs. Ingram and Salmon) only once. This was on a marsh near the

sea between Rye and Winchelsea (Sussex) on July 6th, 1912. Two birds flew up together, and I heard what I described in my notes at the time as "the somewhat unusual pip-pip," and also, from one of the two, "a pleasing spring trilling note." I have a clear recollection of watching the bird "hovering" as Redshanks and other waders do when uttering their spring song on the wing. I have never heard or seen this since.

H. G. ALEXANDER.

COLOUR OF IRIS IN GREAT BLACK-BACKED GULL.

To the Editors of BRITISH BIRDS.

SIRS,—I was interested to read Mr. Haworth's letter on this subject (*antea*, p. 100). In 1925 I handled several winged breeding Great Black-backed Gulls and found the iris to be of a beautiful pearl-grey colour without any trace of any other colour, as I mentioned in *The Ibis*, October, 1925. Might I suggest that the blue as described by Mr. Howarth was due to light reflected off the vermilion orbital ring? Of course it must also be remembered that some bird's eyes change colour under stress, such as handling or wounding, as for instance that of the Hawfinch, which goes from blood-red to pale yellow or even white, and the Pochard drake, which also changes from red to pale yellow under stress. This may be also the case in the breeding Great Black-backed Gull, for all those I handled with the pearl-grey iris were certainly under stress, and in such a condition the iris may have lost the pale blue colour seen by your correspondent.

H. W. ROBINSON.

[The coloration of the "soft" parts of the Great Black-backed Gull given in the *Practical Handbook* were taken from the notes of collectors written on the labels of a large number of specimens in collections. The only personal note I had of the colour of the iris of an adult was "grey sand-coloured with granulated appearance." This was taken on the spot from an adult male immediately after it was shot in the breeding-season, but as all other collectors described the iris as yellow, chrome, lemon-yellow, primrose-yellow, and my note was a single observation, I omitted it. In most books the iris of the adult is described as yellow, but Eagle Clarke in his edition of Saunders's *Manual* states that it is "pale yellow (in the breeding-season pearl-grey)." It seems to me that this is probably correct and an explanation of the discrepancy.—H.F.W.]

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THE GREAT CRESTED GREBE ENQUIRY, 1931, (PART III.)

BY

T. H. HARRISSON AND P. A. D. HOLLOM.

VI.—FOOD HABITS.

(a) Special Results of Aquatic Life.

Before the numbers and habits of the Great Crested Grebe can be fully appreciated it is very necessary to put them in perspective beside the general features of other inland aquatic birds. All inland aquatic diving species have a life differing in several important respects from terrestrial or arboreal species. Most of their life is spent in two dimensions, only food or some special agency cause a three-dimensional existence underwater. Balance becomes more easy, rest more frequent. In feeding, a long neck and bill, powerful swimming feet, a "cigar-shaped" body, become advantageous. This tends to specialize the legs so that they become unsuitable for walking on land, and to a retrograde development of the wings. In consequence, any large diving bird tends to be rather clumsy on the wing. All these features are important in determining the structure, and through the structure the habits, of the Great Crested Grebe.

Further : enemies from above become very few and easily avoided (by diving), those on the surface easily seen and avoided ; and enemies from *underneath* become the chief danger. Obviously the only real protection against these is an increase in size, and a system by which the young are kept as much as possible off the water. The nest becomes a serious problem because the facilities for nest building are very limited under aquatic conditions, and the eggs are endangered by the conspicuous nest-positions which are often necessary. A large nest is needed to protect the eggs against water ; yet this must be low enough for the bird to scramble on to it. The best protection is therefore by covering the eggs, a habit independently evolved by Grebes and ducks. It is not necessary for the young to stay in the nest as long as they can float and are protected against the water (their down satisfies this condition), and they need not be truly nidifugous, in the sense that a young Partridge is nidifugous—that is, able to fend for itself from hatching. For the best possible arrangement is that the chicks should follow their parents and not have to be fed always in the nest. It is easy to see that all these inland diving habitat trends have reached a

climax in the Great Crested Grebe, and influence almost every habit and action.

As a species masters its environments and grows more successful, so it increases from its first favourable centres of distribution, and colonizes less favourable localities. To do this it must intensify protective or aggressive habits against the less favourable conditions, or it will not succeed in overcoming them. So that the more successful the species in colonizing new waters, the more developed its special habits and the more limited its powers of adaptability in the face of any drastic change in the environment. At the same time a greater adaptability is obtained in certain directions. The Great Crested Grebe is going through just such a process in Britain, before our eyes, and it is now breeding on lakes, relaxing territories, and building nests in places, in a manner which would have been declared impossible even ten years ago. The appreciation of these considerations (whether they are agreed with or not) is essential to a clear understanding of the problems now to be considered.

(b) **Weights.**

The following weights are given on labels in the collection at the Natural History Museum, South Kensington :—

					lbs.	oz.
1 Diss, Norfolk, 6.3.99	...	...	...	...	2	8
1 Orford, Suffolk, 3.11.08	...	...	...	...	2	5
1 Barton, Norfolk, 8.9.08	...	...	...	...	2	4
1 Sudbourne, Suffolk, 14.2.12...	...	...	...	...	2	2½
1 Rockland, Suffolk, 3.8.08	...	...	...	...	2	1
1 Barton, Norfolk, 27.8.08	...	...	...	...	1	7
1 Barton, Norfolk, 30.3.17	...	...	...	...	2	1¾
1 Rockland, Norfolk, 3.8.08	...	...	...	...	1	8½
1 Lincoln Fens (1st winter), 13.2.09	...	...	...	...	1	3¾

The males average 2 lbs. 2 ozs., the females 1 lb. 10 ozs.

The Rev. F. C. R. Jourdain has supplied the following weights from various sources :—

Males lbs. oz.		Females lbs. oz.	
3	0½	2	9
2	11	2	8¾
2	7	2	6¼
2	2½	2	1½
1	12	1	15½
1	11¾	1	14
Average 2 5		Average 2 4	

Also not sexed : 2 lb. 2 oz., 1 lb. 14 oz., and 1 lb.
The average of these twenty-four weights is 2 lbs. 1 oz.

(c) **Food Habits.**

Dr. W. E. Collinge has made a special study of the Grebe's food and is publishing a report on the subject. As the food is a vital factor in the distribution of the species, it is necessary here to outline the subject from the angle of this enquiry.

A more or less full Grebe's stomach contains roughly four ounces of food material, perhaps more if the bird has been feeding very actively. Easily digestible fish matter probably demands that the birds have two full meals a day, but they feed off and on most of the day and no doubt take at least another four ounces that way. This probably means about 12 ounces of food a day.

The average weight for the species is 2 lbs. 1 oz. (see "Weights") or about $2\frac{1}{2}$ times its daily food consumption. H. F. Lewis, in his detailed study of the Double-crested Cormorant (*Phalacrocorax a. auritus*) in America, found tame birds ate up to 2 lbs. of fish a day; they weigh around $4\frac{1}{2}$ lbs. D. Seth Smith informs us that at the London Zoological Gardens the South African Black-footed Penguins eat about 1 lb. of fish a day; they are rather heavier than the Great Crested Grebe. Red-breasted Mergansers (*Mergus serrator*) at the Zoo are given $\frac{1}{4}$ lb. of fish a day, and besides that take a quantity of other food on their own. A Little Grebe kept at the Zoo recently ate water-beetles almost continuously all day. One Indian Little Grebe (*Podiceps r. albipennis*) has been known to have 119 insects in its stomach, another a crab, two shrimps, fish, orthoptera, spiders, a caterpillar and five flies (*Records Nagpur Mus.*, II., 1918). These figures (and there are far too few of such available) give a rough comparative check on our estimate of 12 oz. a day for the Grebe.

If we allow that a pair spend April to August inclusive on the lake, and rear the average number of young, as determined elsewhere in this report, and if these young spend July and August on the lake, allowance being made for the gradual increase in their food consumption, then a simple calculation gives us a rough estimate of the total food per pair in one summer. This figure is 300 lbs.!

Sometimes the adults spend February to November on the lake, and the young are present from June onwards. This gives a food consumption of 630 lbs. !! Allowing for the other months the total consumption for one year works out at nearly 750 lbs. On this basis *the amount of food taken by the Grebe population in England and Wales is 900,000 lbs. a year.* Each bird eats its weight 130 times over,

Confirmation of this estimate is supplied from other angles. In Yorkshire ten sticklebacks have been seen fed to one young in ten minutes (H. B. Booth) and several four-inch roach and perch in quick succession (J. C. S. Ellis). A four-inch roach weighs nearly 1 oz. Continuous observation over many consecutive days in Surrey has shown that very small young are given about 70 fish, ranging between half and four inches, a day. Small samples of roach, stickleback and minnows gave about nine to the ounce, which means 8 oz. a day for a baby chick. Moreover, we have seen half-grown young fed with roach of up to ten inches, so large it was hard to believe they could be swallowed until they had finally disappeared down a bulging throat; and we have seen a young bird manage three large roach in an afternoon and evening, the total weight at least 10 oz. It is further reported by G. Bazeley that a Little Grebe kept by him ate 50-60 minnows a day, and was then underfed. The average weight of a grown minnow is rather more than $\frac{1}{4}$ oz., so that 50 minnows would be perhaps 10 oz.; this is apparently the consumption rate of a Little Grebe! Mr. Bazeley further estimates, on the basis of this and of his own observations in Northants, that a Great Crested Grebe takes at least 60 roach a day. If these were two-inch fish they would weight at least 15 oz., and it is very unlikely that all these should be so small—Grebes commonly take six and seven-inch fish weighing 2 oz. or more. Our own estimate for the actual number of fish taken by adult Grebes in Windsor Park (Surrey) is 60 a day. None of these estimates include insect and vegetable food, also taken in quantities. We think our total of food consumption is based on sound observation and calculation, we do not think we have erred on the side of over-estimation. We are grateful to J. R. Norman and the staff of the Fish Room in the Natural History Museum and to D. Seth-Smith of the Zoo, for help in making these determinations.

Four hundred tons is a colossal quantity of food, but its economic significance is slight. No economic fish, plant or insect is affected to any extent, either directly (as far as is known) or indirectly. *Probably the actual number of fish included in this quantity is at least forty millions, and may (including sticklebacks, minnows, etc.) equal nearly one hundred millions.* One hundred million fish a year is a difficult idea for human assimilation.

(1) *Food Items.*—From observational data collected in 1931 it is clear that fish are the main food by a long way. Stomach analyses by Dr. Collinge do not confirm this, but his methods

of determination and the nature of fish remains make it certain that his fish percentage is too low. His figures are :—

Fish	...	...	...	22.5 per cent.
Insects and Larvæ	...	...	...	35.0 „ „
Crustacea	...	...	...	18.5 „ „
Mollusca	...	...	...	7.0 „ „
Newts and Tadpoles	...	...	...	1.5 „ „
Vegetables	...	...	...	15.5 „ „

A summary of 1931 data obtained by the enquiry gives a fair idea of the food-habits in various areas :—

ROACH (*Rutilus rutilus*).—This is the main food in Buckingham, Shropshire, Sussex, Surrey, Norfolk, Northampton, Rutland, Wiltshire (the only food known at Coate) and Middlesex. Two roach were fed in quick succession to one young at Bretton (Yorks.), though perch is the main food there. We have on many occasions seen roach from 6 ins. up to 10 ins. fed to young, some of them giving great trouble before they could be swallowed. The number of small roach taken by one pair with two young we estimate at 200 a day.

PERCH (*Perca fluviatilis*).—Perch are probably the main food in Glamorgan. At Bretton, Yorks., a great many perch are fed to the young ; one chick was given four 4-in. perch in quick succession, another six perch in six consecutive dives, and another a 4-in. and a 10-in. specimen within five minutes. A youngster at Bomere, Shropshire, was killed by having a perch wedged in its gullet. The dorsal fin of this fish must make it more difficult to swallow, and probably leads to a preference for roach where available.

RUDD (*Scardinius erythrophthalmus*).—This fish is taken to a considerable extent on the Norfolk Broads, in Glamorgan and in Bedfordshire, but is never the main food item.

GUDGEON (*Gobio gobio*).—Are recorded by Dr. Collinge.

TENCH (*Tinca tinca*).—The only 1931 record of tench being taken is from Braydon, Wilts. (W. Sole).

TROUT (*Salmo trutta*).—Small quantities of trout are taken in Hampshire, North Wales (Llewellyn and Llanberis), Yorkshire and elsewhere.

GOLDEN CARP (*Carassius auratus*).—During the winter a single Grebe took 100 golden carp from a small pond in Yorkshire (J. C. S. Ellis).

CHARR (*Salvelinus alpinus*).—Only noted as taken at Llewellyn and Llanberis, North Wales (H. E. Forrest).

BREAM (*Abramis brama*).—Small bream are taken to a considerable extent on the Norfolk Broads, the London reservoirs, the Shropshire meres, and several lakes in Wiltshire and Buckingham.

BLENNIES (*Blenius* sp.).—Are mentioned by Dr. Collinge.

STICKLEBACKS, MINNOWS, ETC. (*Gastrosteus* sp.).—Fair numbers taken on the lakes in Windsor Park (Surrey and Berks.), Norfolk, Glamorgan and Yorkshire. At Fairburn, Yorks., ten were fed to the young within ten minutes.

DACE (*Leuciscus leuciscus*).—Recorded in Cheshire.

EELS (*Anguilla anguilla*).—Small eels are taken on the Norfolk Broads to a considerable extent, also in Wiltshire and Hampshire.

SPAWN.—Various types of spawn have been damaged by Grebes on a few occasions, lately at Fritton (Suffolk) and Braydon (Wilts.).

NEWTS AND TADPOLES.—Are taken to a small extent.

MOLLUSCA.—Small aquatic snails are recorded in stomachs and we have seen a Grebe picking them off reed-stems in Surrey.

ARTHROPODA water-beetles, Dytiscids, *Hydrophilus*, *Hydrobius* and dragon-fly are taken. Small moths emerging at dusk are sometimes caught over the water. We have many times seen large flies picked off the surface (though some observers say the bird cannot feed on surface matter). In Leicestershire surface insects are taken by adults only and never given to the young (H. R. Jasper). Small *Crustacea*, *Gammarus*, etc., have been recorded and may be very important in the absence of other foods; *Naucoris cumicoides*, which feeds on small aquatic insects, is mentioned by Jourdain in the *Practical Handbook*.

Vegetable Matter.—In Yorkshire plant material is favoured to an unusual extent. Early in the year leaf buds of *Phragmites* are often taken, later flower buds of Canadian pondweed, and in autumn water plantain seeds are much favoured (C. J. Proctor). *Algae* are, however, preferred in Yorkshire and are also a common food in Notts. (J. Whitaker). "Some vegetable matter" is noted in Essex, "food mainly vegetable" at Kindar Loch, Kirkcudbright. In Leicestershire plant feeding is said to be confined to adults, while in Wiltshire adults have been seen to swallow large strings of weed with much difficulty. On the Broads yellow flannel weed is taken in large quantities and at Hickling a bird was found dead, its gizzard choked up with long strands of this growth (J. Vincent). The significance of weed-strands in courtship is well known.

(2) *Feeding Times*.—Six observers show that during the summer there is a period of early morning food activity, continuing intermittently until about 11.30 a.m., when there is

more or less of a lull until 2 p.m. From 2 till about 5 p.m. feeding is intermittent ; as sunset approaches it accentuates and until it is almost dark the adults commonly feed with the greatest vigour. (T. A. Coward, H. Drake, J. C. S. Ellis, J. T. Hemming, H. G. Wagstaff, T.H.H.).

(3) *Drinking*.—The birds are commonly observed to take two or three sips of water after swallowing a particularly large fish. In doing this they throw their heads back between each sip. They rarely drink at other times. (J. C. S. Ellis, T.H.H.)

(d) **Dives.**

The average dive seems to be 26 seconds, the total range reported by thirteen observers in different areas being 15-41 seconds. The average of long series for other Grebes timed by T.H.H. indicate that the Dabchick average 15 seconds, the Black-necked 45-50, the Slavonian about the same as the Great Crested. The depths favoured for feeding seem to be around 6-12 feet, often much less. Forty to fifty yards may be travelled under water in one dive, but this is unusual. Intervals between dives average about 16 seconds. These times are usually the same for birds feeding at sea, and according to the American formula (see Allen, *Birds and Their Attributes*) of seconds per fathom, an average of 26 means that the birds favour just over $1\frac{1}{2}$ fathoms. In general this corresponds with observed feeding depths on inland lakes.

The wings are not used in swimming under water ; the feet are the main method of propulsion and are worked simultaneously sideways on a plane parallel with the surface. (E. C. Arnold, R. H. Brown, H. F. Chittenden, T. A. Coward, J. C. S. Ellis, H. R. Jasper, D. L. Lack, H. Ormesher, E. C. Sharp, T.H.H., P.A.D.H. and others.)

(e) **Dive-Speeds.**

At Staines Reservoir (Middlesex) a bird dived and swam along parallel with the bank. It was timed, the distance covered was marked and measured. The underwater speed obtained was 2.4 miles per hour. (T.H.H.)

(f) **Preening.**

Adults in summer have a fairly elaborate toilet about every half hour, if they have been diving. The feathers, especially those of the breast and flanks, are carefully cleaned by the beak, and the bird rises to a half-standing position to shake and dry itself, half turns on one side and scratches with its feet, shakes its toes, sometimes flaps its wings slightly, and

so on. Often while preening, feathers are plucked out and these are frequently eaten or fed to the young (see "Feather Eating"). At sea careful preening is less common, standing in the water more so.

(g) **Feather-Eating.**

From a very early age young Grebes are fed on feathers from the adults. We have seen a four-day chick given fourteen feathers in one day. This curious habit, widespread among the *Podicipediformes*, is closely connected with preening. When a Grebe is preening it dries its feathers carefully by passing them through the beak; often a feather comes out, and is swallowed by the preening bird or fed to the chick.

This habit is said to help in the formation of pellets, but there is no evidence at all of pellet formation, and even if there were it is difficult to see the use of feathers in this connection. Some stomachs are congested with feathers—mostly white breast feathers—which may even be in a state of almost decomposition, green and unpleasant. We suggest that the feathers may be useful in protecting the walls of the digestive organs against fish-bones, but these organs are strong and thick, doubtfully in need of protection. Wetmore (*Food and Economic Relations of N. American Grebes*) has suggested that the feathers act as a strainer to prevent the passage of fish-bones or large fragments of chitin into the intestine until they have been reduced to a proper size and condition by the process of digestion. P. Madon (*Revue française d'Ornithologie*, 1926, and *Alauda*, 1931) has discussed the various theories at length and suggests that the feathers, in addition to causing fish-bones and other residue to be retained until more completely digested, may also assist in retaining *algæ* and minute eggs which he considers important food-items and very resistant to digestive juices and easily passed through. But he concludes that this and other suggested explanations are unsatisfactory and that we must seek elsewhere than in a study of the food. An analysis of decomposing feathers might disclose some chemical, useful in digestion; but the Grebe's own digestive juices must surely be sufficient in themselves. W. Rowan (*The Riddle of Migration*) has noted that analyses of feathers have demonstrated the presence of ergosterol, which when exposed to ultra-violet rays elaborates vitamin D. He suggests that hawks, which normally feed their young on plucked birds and periodically administer feathers, thus make up a deficiency of vitamin D. But this certainly cannot explain the large number of feathers taken by Grebes.

On the whole we are inclined to believe that the habit of eating feathers is partly a psychological one, a development of preening and perhaps of the curious weed-presentation phases in display (we have seen a male Grebe give one of his breast feathers to his mate in July). It is interesting to note that we have seen chicks a few days old peck at and pluck out the breast feathers of an adult.

(h) **Flight.**

The Great Crested Grebe is a poor flier. On the breeding lakes the birds seldom fly ; they prefer to travel underwater. Similarly, if chased by boats they will dive rather than fly, so that on Lake Geneva in the past it was an established sport to hunt down and kill Grebes from rowing boats. In the courtship season and on large reservoirs they more often take wing, but less than any other aquatic bird apart from the Little Grebe. At sea they will travel miles along the shore diving and drifting with the tide. Scuttering along the water is a common form of progress in winter, especially if the bird has been "torpedoed".

The only known *Flight-Speed* is one obtained by us at Molesey Reservoirs (Surrey) with stop-watches over a known distance. The speed was calculated to be 37 miles per hour.

Wing-Beats timed by us on two occasions with stop-watches work out, as nearly as can be counted, at 290 and 240 beats per minute, which is fast. The bird seems quite incapable of rising from the land, and is similarly helpless when on ice. In landing on water it strikes with the breast, and does not brake with the feet or wings. In flight the head is usually held slightly below body level ; on some occasions in spring a joy flight is performed, and in this the head may be thrown back and bent.

VII.—RELATIONS.

(a) **Mortality.**

Of paramount importance in understanding the distribution and habits of a species is a knowledge of its enemies and the factors which reduce its numbers. Particularly is this so when the species under discussion is changing in status, up or down. The data on the Grebe young ratios show that an average of 1.3 young per pair is raised.

It is clear, therefore, that the average life is comparatively short, and that there is a big wastage in the egg and chick stage. It is necessary to give data on these points.

(1) *Egg-Mortality*.—Fertility is definitely high, close on 95 per cent. Therefore egg-mortality is almost wholly a question of external factors. We have received 83 egg-mortality records during 1931; these may be taken as representative, for they cover every county and every conceivable cause. A tabular analysis of these records shows the importance of the various factors rather clearly. It must be understood that the numbers given are the numbers of lakes at which the factors were noted, *not* the numbers of eggs affected. In each case at least one, and probably four or five clutches are involved in every record; where it reads “drought 8” drought was actually responsible for destroying about 120 eggs at eight lakes.

Mortality Factor.								Number of Lakes Recorded.	
<i>Human.</i>									
Anglers (egg-breaking)...	4	} 24	
Eggs robbed	...	...	...	...	...	...	20
<i>Mammals.</i>									
Fox	2	} 9	
Weasel	...	...	...	...	...	...	1
Rats	...	...	...	...	...	...	6
<i>Birds.</i>									
Rook	1	} 33	
Carrion-Crow	...	...	...	...	...	...	9
Hooded Crow	...	...	...	...	...	...	1
Magpie	...	...	...	...	...	...	1
Coot	...	...	...	...	...	...	21
<i>Weather.</i>									
Floods and Rains	9	} 17	
Drought	...	...	...	...	...	...	8

It will be seen that egg-thieving and the hostility of Coots are the chief individual factors, while depredations of *Corvidæ* and changes in water-level are important.

The total of eggs involved in the above records is about 650. This probably represents about half the eggs destroyed before hatching during 1931.

Carrion-Crows were a trouble at some lakes in Hertfordshire, Wiltshire, Norfolk, Shropshire, Middlesex, Essex (in particular), Northamptonshire and Warwickshire. They chiefly take first clutches laid when cover is not sufficiently grown.

The single record of a Magpie taking eggs is from Lincoln, and it is curious that there are no more records for this species or for Jackdaws. Rooks take eggs at Esthwaite (Lancs.),

where the rookery is very close to the water. The interference of Coots is discussed under "Relations". The Hooded Crow record was for an early nest (and a late Hoodie?) on the Broads. Rats are a menace on some Shropshire lakes but only occasionally elsewhere. At Heigham (Norfolk) the weasel is noted as a minor factor. Foxes are important at Great Hallingbury (Essex) and in north Leicestershire.

Changes in water-level during 1931 were especially disastrous in Worcester and Northampton, and in Warwick (Edgbaston Pool), Wiltshire (Coate Reservoir), Yorkshire (Gouthwaite), Shropshire (Walcot), Suffolk (Fritton) and Nottingham (Girton and Flintham). Many pairs attempted to hatch off three times before they were finally successful, particularly in Worcester. In Yorkshire, on the other hand, they abandoned after the first attempt.

Egg-robbery as a factor is almost entirely the work of boys; the bird is now so common that collectors are hardly interested. Proud head of the egg-robbing is the public school-boy—Rugbeians in Warwick, Harrovians at Ruislip and Elstree, Stoics at Stowe and Blackpit (in Bucks.). Elementary school-boys and "trippers" seldom do damage, but pit-boys in Lancashire and "Tommies" in Surrey are a nuisance! The only place where egg-collectors are blamed is in Northumberland; these poor people seem to be accused of everything in that part of the world.

The next stage in the natural check exercised on numbers is in the chick stage, and a similar summary will serve there.—

(2) *Chick Mortality*.—In this stage the greatest mortality occurs. Pike are much the most important factor observed. Another factor very difficult to observe, but studied by us in Surrey, is a semi-automatic control—competition *within* the brood of young. Unlike nidicolous birds, the young are not purely passive food recipients. Unlike most nidifugous birds, the young cannot forage for themselves and be largely independent of parents at birth. They are always dependent partly on their own activity in reaching the parent, partly on the parents' success in bringing food. When there are more than two young the first week is one long rushing across the water for the chicks; the weaker chicks will inevitably suffer. We found this was a cause of chick-mortality in Surrey.

Records on causes of death in chicks have been received from seventy-four lakes in 1931:—

Mortality Factor.							Number of Lakes Recorded.
<i>Human.</i>							
Weed-cutting, etc	...	...	...	...	...	...	4
<i>Mammals.</i>							
Otters	...	...	...	...	...	...	4
Fox	...	...	...	...	...	...	1
<i>Birds.</i>							
Heron	...	...	...	...	...	...	2
<i>Fish.</i>							
Pike	...	...	...	...	...	...	5
Trout	...	...	...	...	...	...	2
Eels	...	...	...	...	...	...	1
<i>Weather.</i>							
Rains, etc.	...	...	...	...	...	...	4
<i>Other Causes.</i>							
Various	...	...	...	...	...	...	2
Competition within the broods	...	...	...	...	...	...	?

Weed-cutting and weather are erratic factors, but the latter may be of much importance in very wet or very hot years. It is possible that unusually high or low temperatures have an effect ; we have seen young suffering visibly from intense heat, and death from this cause is suspected in Suffolk (H. Drake).

Otters are particularly bad in Northumberland, where they have prevented colonization of some waters ; eels are said to be destructive at Renishaw (Derby) and in Suffolk. Pike are reported as destructive from almost all the large lakes and from every county, and they probably take chicks wherever they occur. In some localities they have prevented young being reared for several years consecutively and have even caused desertion.

(3) *Adult Mortality.*—It is obvious that a large number of full-grown birds must die between September, 1931, and May, 1932, but exactly how this comes to pass remains something of a mystery. The following table gives the total records of mortality from various causes reported in the past year :—

							Summer.	Winter.
<i>Human.</i>								
Anglers	...	...	...	...	...	...	18	—
Shore-shooting	...	...	...	...	...	...	—	8
Pollution	...	...	...	...	...	...	1	—
<i>Accident.</i>								
On hooks or striking wires	...	...	...	...	...	...	3	5
Lights	...	...	...	...	...	...	—	2
Choking	...	...	...	...	...	...	2	—
<i>Weather.</i>								
Frosts	...	...	...	...	...	...	—	4
Storms	...	...	...	...	...	...	—	2
<i>Unknown Causes</i>								
	...	...	...	...	...	...	2	3
							26	24
							—	—

It is at once notable in the above that the adult has no natural enemy at all; no bird, fish or mammal is known to take Grebes. Further, most of the records are either directly or indirectly (e.g., telephone wires or lights) due to man, who is responsible for three-quarters of the deaths. The five "unknown" cases may have been due to disease, but no disease is known or recorded either in adults or young. But, unlike other factors concerned, these records of damage done by man probably represent a large extent of the damage he does, for these are the most obvious and likely to be recorded causes of death. Two hundred birds killed in these ways would be a very liberal allowance.

The effects of frost are not marked, but in exceptional years such as 1917 or 1929, two or three hundred birds may well have been affected. However the only definite reports of frost mortality in the great 1929 cold-snap are from Suffolk, Shropshire and the London reservoirs—involving perhaps forty birds in all. Normally cold weather does not seem to make much difference, the birds move out to sea when the lakes become frozen up. A frost accompanied by big gales at sea might cause disasters.

Oil is the only other obvious factor. No reports of oiling were received in 1931, and Grebes are not affected to the same extent as Divers, Scoters and Auks. Seldom are more than one or two found along any stretch of beach during the winter. No dead birds have been found at all in the Blakeney-Salthouse area of Norfolk (R. M. Garnett). The average oiled is six per year at Dungeness, Kent (J. R. Tart). We do not think that more than a hundred or so would die by oiling each winter. A curious case was that of a Grebe seen by us badly oiled at Staines Reservoir (Middlesex) on March 15th, 1930.

(4) *Mortality at All Ages*.—From all this we can reckon the significance of the various mortality factors throughout the life cycle, remembering that several important ones, such as competition between young, death at sea, oil, etc., are not fairly represented. By reducing all these to a percentage we can obtain a comparative scale:—

Factors.	Approximate Percentages.			Totals
	Eggs.	Young.	Adults.	Reduced to 100 per cent.
Human ...	29	5	74	36
Mammals ...	11	7	0	6
Birds ...	40	3	0	14
Fish ...	0	77	0	26
Weather ...	20	5	12	12
Other Causes ...	0	3	14	6
	100	100	100	100

This demonstrates a curious interplay of the various factors—first the eggs subject to vagrant terrestrial influences (boys, rats and rain); then the young at the mercy of the fish beneath them and free from their late (egg) enemies of the land; finally the adult, largely controlled (as far as is known) by the stupid vandalisms of man, as represented by prowling shore-shooters, oil on the high seas, telegraph-wires along the coast, or the pollution of rivers and lakes. Man has always been the great aggressor of this species, first for food, then for his ladies' hats, muffs, boas and coats, now to preserve his fish. In 1931 fishermen destroyed Grebes on at least eighteen lakes, in several cases shooting five or six pairs and breaking all the eggs, especially on the large Midland reservoirs. We must add that most of the recent persecution has been the work of ill-informed angling clubs; the great majority of landowners, including those who preserve their lakes for fishing, do not molest the Grebes, and most often protect them. The decrease in otter-hunting, too, may cause a decrease in Grebes, a possibility already apparent in Northumberland and Suffolk.

(5) *Special Habits Developed as a Result of Mortality.*—It is interesting to note that two habits especially associated with the Great Crested Grebe are both connected with mortality factors. The covering of eggs when the nest is left is the only possible protection against the attacks of Crows, Coots and also man. The carrying of chicks on the back (a habit found equally in England and Tibet) is the only possible protection against pike. Neither method is wholly successful, because sometimes the eggs are left uncovered and often the young are left on the water. Both habits are erratic and inconsistently developed, but it is obvious that even so they reduce mortality enormously.

(To be continued.)

THE ROOSTS AND DIURNAL DISTRIBUTION OF STARLINGS IN NORTH DEVON DURING THE MONTHS OF DECEMBER AND JANUARY, 1931-1932.

BY

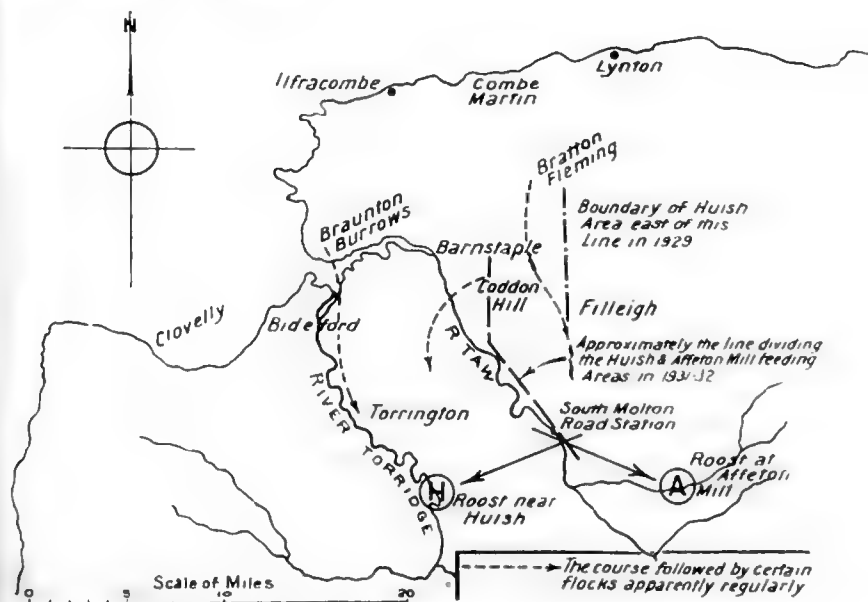
H. A. R. THOMSON.

IN 1908 Mr. Bruce F. Cummings published in *British Birds* some observations regarding routes and roosts of birds, including Starlings (*Sturnus v. vulgaris*), in the district of Barnstaple (Vol. II., pp. 119-124), while in 1929 an account of the distribution and roosting habits of Starlings in Devon and Cornwall was contributed by Mr. V. C. Wynne Edwards (Vol. XXIII., pp. 138-153, 170-180). A part of north Devon was not included in the latter survey, and in response to enquiries by Mr. Machell Cox, who had undertaken the original survey with Mr. Wynne Edwards, the writer made a few observations in this district during the winter of 1929-30. In December and January, 1931-32, time was found for a more thorough investigation of the district. The area in which observations were made is about 340 square miles in extent, stretching southward from Ilfracombe on the westward extremity and from Bratton Fleming in the east to a line drawn through Worlington and Huish. No observations were made between Bratton Fleming and the coastline from Combe Martin to Lynton, and the country close to Worlington and Huish, which had previously been surveyed by Mr. Machell Cox, was also neglected.

The whole of this area is served by two roosts, one at Huish and one at Affeton Mill. Both these roosts were reported in Mr. Wynne Edwards' articles. During the winter of 1929 the Starlings from Bratton Fleming were followed to the roost at Huish. The boundary of the feeding area of this roost was observed to lie somewhere to the east of Filleigh (see map). In 1931 it was found that the Starlings from Bratton Fleming no longer roosted at Huish and now flew to the roost at Affeton Mill, an equal distance away. During the last few years the size of the Affeton roost has considerably increased and its feeding area now extends as far as Coddon Hill, four miles west of Filleigh, and the boundary line appears to run in a south-easterly direction from this point. At Coddon all flocks on the east side of the hill flew to Affeton Mill, and all on the west to Huish. Further south, near South Molton Road Station, the dividing line between the two areas is not

so clearly marked, and in the evening, flocks can be seen crossing the valley to their respective roosts in opposite directions.

Mr. Cummings reported that there were four or five roosts in the Barnstaple district, and he did not discover any flocks travelling more than six miles to and from a roost. At the present time birds travel about three times that distance although there appears to be no lack of suitable roosting places nearer at hand.

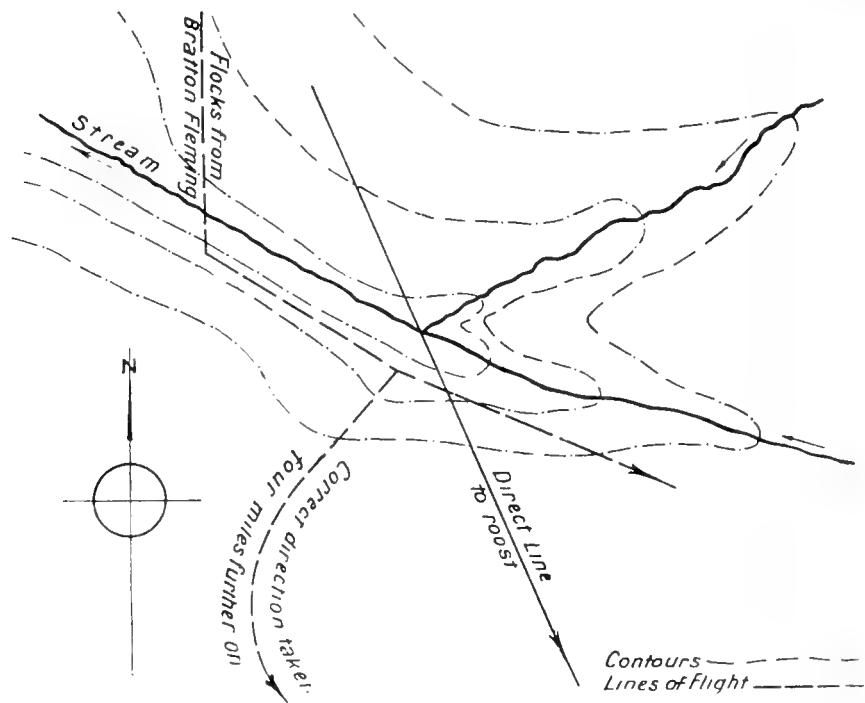


Map of North Devon, showing roosts, deviations and feeding areas of Starlings. December-January, 1932.

Only about 120 square miles of the Affeton Mill feeding area lie within the district that has been surveyed. Birds feeding on the outskirts must travel each evening at least seventeen miles. In the Huish area flocks have been traced to the roost from the high ground near Ilfracombe nineteen and a half miles away, and although personal investigations have not been extended for more than a mile or two to the west of Torridge it has been reported that as far away as Clovelly the roosting flights are directed towards Huish. This gives the extent of that feeding area on the north side alone as being approximately 326 square miles.

The greater part of the investigations concerned the routes taken by the Starlings to their roost. It is generally assumed that the birds fly in an approximately straight line to the roost and change their course, if it is necessary, when, after crossing a line of hills, new landmarks are visible, as though memory of

the ground previously covered aided their sense of direction. In certain places, however, the deviations from the straight were so great as to make it essential to follow the flocks for a short distance each night to discover for which roost they were heading. At Bratton Fleming the flocks which passed over the village took approximately the same line as when they roosted at Huish, although there is a difference of about 35 degrees between the two lines. The line taken by birds going to Affeton Mill was generally due south and the reason for this, apparently, was that a mile from the village they had to cross a valley which rose very steeply on the south side. At one point the incline was more gradual and it was



Sketch Map showing courses of certain flocks of Starlings when they reach the valley south of Bratton Fleming.

Scale approximately 2 inches to the mile.

Note: Contouring, scale and directions are only approximately correct. towards this that the flocks converged. Those which struck the valley lower down turned and flew **up** to it and then turned again and flew in a zigzag course up that side of the valley and over the top. At times when the wind was very strong they were unable to climb the side directly even at this place and continued their way up the valley rising slowly all the time until they were out of sight. (See sketch map.) On the other side of the valley the country slopes away to the west; this had the effect of keeping the Starlings to a

southerly instead of a south-easterly course, and it was not until they reached the neighbourhood of Filleigh, where the high ground commands a clear view of the country in the direction of Dartmoor, that the birds were observed to be flying straight for Affeton Mill.

Other deviations from the direct line occurred in the neighbourhood of Barnstaple. At Coddon, Barnstaple and along the old Bideford road, south-westerly flights were recorded, and these, in conjunction with south-easterly flights from Braunton, seemed to indicate that there was a roost not far from Bideford. However, as no such roost existed, the ground had to be covered again and an explanation found for the direction which the Starlings had taken. In all cases the deviation proved to be due to the physical features of the place where the first observations were made. At Coddon it was found that no flocks flew over the hill, all skirting it on the south-west side and continuing on the south-westerly course which the detour had given their flight until they had crossed a second range of hills and were out of the observer's sight. On the old Bideford road it was found that the Starlings which had given the misleading direction were those which, after crossing the river, passed over a range of hills running parallel with the river by means of a shallow valley, which they sometimes left in a south-westerly direction.

Another case of deviation was noticed at Braunton Burrows, where small flocks instead of taking the usual line flew up the mouth of the Torridge. As flocks have been seen following the valley of the Torridge—they do not follow the curves of the river itself—all the way from Land Cross near Bideford to Torrington, it is probable that this is a route that is taken regularly.

It is to be regretted that time was found for only three evenings at Torrington. Here interesting deviations were observed and the cause of them was not discovered. The majority of flocks headed straight for Huish with little or no deviation in their flight to avoid crossing over the hill on which the town stands. A few, however, took a different line and skirted the town on the west side. Attempts to discover where these flocks turned, if indeed they did turn, to join in the flight to Huish, failed, but as they were not picked up again on the line which they had taken it seems improbable that they were making for another roost. If such a roost existed, the people among whom inquiries were made did not know of it.

Referring to routes taken by flocks of Starlings, Mr. Cummings writes that he "repeatedly noticed how strictly the birds keep to their arbitrarily prescribed line of flight", and he described how they skirted but did not cross over Coddon Hill. During the present survey it was found that in open country no position was taken up close to which flocks did not pass. It was only at places such as those mentioned, where the physical conditions of the land seemed to be the cause, that definite routes which deviated from the straight were followed.

The Starling population of north Devon increases gradually throughout the autumn and early winter. Flocks do not visit Bratton Fleming regularly until several weeks after they are well distributed in districts closer to roosts. In early autumn small roosts are occupied and later deserted. The number of these roosts has not been discovered. The movements of Starlings at this time would require a separate investigation.

The area is so large and the time available was so short that it is possible that a small roost may have been overlooked. The writer would be glad to receive information about any roost known to be occupied in the area during these two months. That there should be any large roosts seems unlikely, as with the exception of the flights mentioned at Torrington all doubtful flights were traced to within the recognized feeding area of one of the two known roosts.

NOTES

NOTICE TO RINGERS.—Ringers are reminded that all schedules with lists of birds they have ringed during the season should now be sent in. A special form for the list of totals ringed has already been issued to each ringer, and it is particularly requested that this form shall be used. *Separate* lists should be sent in at the same time of all birds recovered, and those who have done any considerable amount of re-trapping are asked to apply for a special form for recording re-trapped birds only. H.F.W.

ACCIDENTAL ATTACHMENT OF ADULT AND NESTLING HOUSE-SPARROW.

THE case recorded by H. F. Witherby (*antea*, p. 96) of a curious fatality to a Redbreast and its young is recalled by a somewhat similar instance which has just come to my notice. In this case an adult female House-Sparrow (*Passer d. domesticus*) and one of its unfledged nestlings were firmly attached to each other by their tarsi by a short length of fine but rather loose texture string. A quantity of similar string was found in the nest material. The length of string between the tarsi is 13.5 mm. In the case of the adult the string is attached just above the insertion of the hallux of the right leg, while in the case of the nestling the string is attached by a figure of eight loop over the lower end of the tibio-tarsus and the tarsus proper just above the left heel joint, causing this articulation to remain acutely flexed; midway between the two tarsi the string appears to be knotted, and only one free end of the piece of string is apparent. The bird, much hampered with its nestling thus attached, had been flying about, no doubt attending its brood, until it was caught and killed by a dog, in a very exhausted condition. The nestling was alive when found, but how long it had been thus attached I am unable to say, as only the cut-off tarsi with the string attached were given to me. I am indebted to Mr. W. Norman, of Sevenoaks, for bringing this curious mishap to my notice.

JAMES M. HARRISON.

TREE-PIBIT IN IRELAND.

THE following notes are taken from my diary, written at the time at Raford, Athenry, co. Galway.

From about May 15th to June 28th, 1932, a Pipit made its headquarters on a hawthorn about 25 ft. high, standing alone in a field, bounded by banks or sapling trees. It used to perch on the top of the tree singing a loud, clear, drawn-out note "*cheer, cheer, cheer*", and would then fly up perpendicularly, singing and descending again to the tree, occasionally alighting on the rails or saplings bounding the field and singing all the time. On June 28th it was very restless, only singing slightly, and from that day to July 5th I only had occasional glimpses of it, never very close. On July 10th I heard what I believe to be the same bird in an adjoining field and since have only seen it once. There are Meadow-Pipits (*Anthus pratensis*) in the bog to the west of the field, but I never saw any in that where this Tree-Pipit (*A. trivialis*) was singing. Besides the very distinctive song, which I had good opportunities of comparing with that of the Meadow-Pipits, it seemed to have more distinct markings on the head, and the feet appeared light yellowish brown through glasses when the bird was perched a few feet away. The song was loud and clear enough to be heard at over 300 yards distance.

During the whole of the period in question I never saw any sign of a mate, nor did I find a nest. KATHLEEN GOUGH.

[It is interesting to note that while the Tree-Pipit has never been proved to breed in Ireland and is only an occasional straggler to that country, a bird, which appeared to be single, was heard singing in May, 1914, also in Galway.—EDS.]

BOTH BIRDS OF PAIR OF PIED WAGTAILS BUILDING NESTS.

THIS year (1932) a pair of Pied Wagtails (*Motacilla a. yarrellii*) that I thought were first attempting to nest in a recess at the side of my out-buildings at Bewdley, Worcestershire, eventually reared their brood at the gable-end. During the second nesting I noticed that the female had selected a similar position within two feet of the former nest, but the male totally ignored it and was equally busy for several days constructing a nest at the top of an ivy-covered wall near by; neither bird was seen to visit the other site. It is more than probable that two nests were at first similarly constructed in duplicate, but I had not noticed the hen bird's nest until I found for no apparent reason the other deserted.

J. S. ELLIOTT.

[This case has some interest apart from the fact of the individual birds working quite independently of one another—

for it has been stated by Edmund Selous (*British Bird Book*, I., p. 245) that the female alone builds. It would be of considerable interest to record further observations on the share of the sexes in building, as the normal procedure among the Wagtails is for the male to accompany the female when building, but not to take part in the actual work.—F. C. R. J.]

MARSH-WARBLER AND BLUE-HEADED WAGTAIL NESTING IN KENT.

IN Vol. XXI., p. 63, I recorded the Marsh-Warbler (*Acrocephalus palustris*) as again nesting in the Medway Valley and I stated that in my opinion the bird was increasing in numbers.

This year in the Medway Valley, about two miles from the previous locality, my friend, Mr. Clive Simson, on May 28th, 1932, found two pairs. We watched them on several occasions and they both nested in tall nettles. Both cock birds were perfect mimics, one in particular singing occasionally its own note, but usually copying either Whinchat, Reed-Bunting or Red-backed Shrike, which had nests close by. I do not wonder this bird is overlooked as anyone who did not know its natural note would imagine the song came from some other species of bird close by.

On June 14th Mr. Simson saw a cock Blue-headed Wagtail (*Motacilla f. flava*) feeding one young bird near Queenborough in Kent; this bird is not nearly so rare as is generally supposed.

JAMES R. HALE.

LESSER WHITETHROAT IN PEMBROKESHIRE.

ON May 27th, 1932, I heard a Lesser Whitethroat singing in an old quarry north of Llangwm Ferry. I heard and saw the bird on several occasions in June, but I had no time to look for the nest. On July 7th I visited the quarry and saw a pair feeding young in the bushes there. There were at least three young fluttering about, and one of the adults still uttered the characteristic rattle, yet subdued and inaudible at a distance.

The Lesser Whitethroat (*Sylvia c. curruca*) is a scarce visitor in Pembrokeshire, and as far as I am aware this is the first record of breeding in the county.

R. M. LOCKLEY.

SIZE OF CLUTCHES OF NIGHTINGALE.

OF thirty-seven nests of the Nightingale (*Luscinia m. megarhyncha*) that I have examined in Suffolk this year (1932), one contained 6 eggs, thirty-one 5 eggs, and five 4 eggs.

A noticeable fact is the number of clutches of eggs or broods of nestlings destroyed by vermin, there being eight cases of such destruction. The number of addled eggs also has been above the normal, most probably the result of a cold and wet May.

In 1931, of thirty-four nests, twenty-nine contained 5 eggs, four 4 eggs, and one 3 eggs (*antea*, Vol. XXV., pp. 79-80).

A. MAYALL.

SPARROW-HAWK USING JAY'S NEST FOR REARING THEIR YOUNG.

FOR the past thirty years a pair of Sparrow-Hawks (*Accipiter n. nisus*) have nested in the forest-land vicinity of my house in Shropshire and have invariably, with protection, reared their young. Usually they have selected one of the larger oak trees as a site for their nest, but occasionally a Scots pine and once a holly. In one instance the same nest was used for many years until destroyed, again another for two successive years and then ignored. This year (1932) they were again in evidence, seen passing to and fro on their accustomed flight lines, but I failed to locate their nest until I saw the female brooding on a Jay's nest where young were reared last season. This nest was in a small oak sapling that measured not more than 4 ins. thick at 6 ft. from the ground and the nest only 14 ft. high and in a most conspicuous position. It contained a clutch of five eggs. The nest measures but 12 ins. across and had been relined with the usual fir tree bark, sticks had been added then and subsequently, but being without lodgment had fallen to the ground and one wondered how the brood could be reared with shambles so limited. At times the hen bird, when incubating, would allow me and my two dogs to remain beneath the nest without her leaving it. The young were hatched and three subsequently flew—the fate of the other two being unknown. J. S. ELLIOTT.

FOOD OF THE COMMON BUZZARD.

A PAIR of Common Buzzards (*Buteo b. buteo*) were kept under observation for about half an hour on August 10th, 1932: one was in the air and the other on a rock on Dartmoor. From the behaviour of the bird on the rock it was thought that it had cast up a pellet and this was found without difficulty.

The pellet was of the usual shape, of firm consistency and tapering at one end. It was purple in colour and studded with the seeds of the whortleberry, *Vaccinium*.

The pellet was soaked and its contents identified as follows : Seeds of *Vaccinium* (very numerous) ; skin of fruit of *Vaccinium*, ripe and unripe, especially the proximal disc. (numerous) ; three soft shoots, $\frac{1}{4}$ in. long (? *Vaccinium*) ; one woody stem, $\frac{1}{2}$ in. long (? *Vaccinium*) ; one undamaged leaf of *Vaccinium* ; three quartz pebbles, $\frac{1}{8}$ in. in diameter ; setæ of *Lumbricus* (very numerous) ; chitinous parts of three different species of beetle (numerous) ; portions of grass leaves about two inches long ; monocotyledonous fibres, about two inches long, which bound the pellet together (very numerous).

It is well known that beetles and earthworms form part of the staple diet of the Buzzard (*Practical Handbook of British Birds*), but whortleberries appear to be unrecorded. The leaf and stems were probably taken accidentally with the berries, as the Buzzard's beak is not well adapted to fruit picking.

The pebbles may have been taken accidentally in the same way, or regurgitated with other indigestible matter from the bird's gizzard.

The presence of the grass leaves and fibres, which were no doubt derived from them, requires further comment. There are three possible explanations of their presence: 1. The bird may have eaten them accidentally in the same way in which the short stems were eaten. 2. The bird may eat grass because it likes it. 3. The bird may be unable to make bricks without straw, and so, when on an invertebrate and vegetarian diet, eats grass in order that the fibres separated, in the gizzard may bind the components of the pellet together and thus facilitate regurgitation.

The fibres were so numerous that (1) seems improbable, and obviously if (2) is correct, (3) may or may not be significant.

J. R. GROOME.

YOUNG PINTAIL IN CAITHNESS.

WHILE in north Scotland this year I was shown the skin of a Pintail (*Anas a. acuta*), which had been shot with another in Caithness in the first week of August, 1931. It was obviously a bird of the year, and Miss Best, who examined the skin with me, made the following notes: "The bird was about three-quarters grown and there were still big patches of nestling down, through which the feathers were growing. The bird might have fluttered a little way, but could not possibly have flown far". W. NORMAN MAY.

SLAVONIAN GREBE BREEDING IN NORTH SCOTLAND.

ON June 23rd, 1932, P. D. Baird, J. D. Davis and I discovered a pair of Slavonian Grebe (*Podiceps auritus*) breeding in the extreme north of Scotland in a locality which (Mr. Witherby informs me) is not the same as that recorded by Miss Baxter and Miss Rintoul (*cf. antea*, Vol. XXIII, page 231) in Sutherland, May, 1929, but is a further extension of the bird's range to the north-east.

The nesting-site is a small loch half a mile long, a couple of hundred feet above sea-level. At one end the water is shallow with a soft bottom and extensive reed-beds. Here we first saw the Grebes, which were not at all shy and gave ample opportunities for identification.

The bird, which swam from the nest and we took to be the female, had the top of the head dark grey instead of black as in the other bird, and the back grey and not so dark, the ear-tufts were also smaller and paler—not such a bright orange.

The nest was in reeds about 18 ins. high, in a foot of water, five yards from the shore. It was made of reeds cut up into various lengths. Diameter at water level 15 ins., height 5 ins., diameter of cup 5 ins. On June 23rd there were two eggs slightly stained. On July 1st there was only one egg. On July 12th Baird visited the place alone and found a track through the reeds leading to the nest which was empty. The Grebes were at the other end of the lake and there were no signs of young. It must therefore be inferred that the brood was a failure. This was the only pair in the district, so far as we could discover.

M. E. W. NORTH.

FAMILY LIFE OF COMMON SANDPIPER.

ON June 9th, 1932, while motoring with Dr. H. B. Elton through Lanark, south of Abington, we came to a quiet spot with a burn close to the road and a peat hag beyond. A Sandpiper (*Tringa hypoleucos*) was very noisy and excited as if breeding, but we could see no nest. After we had been there for some time, the Sandpiper, which had kept on calling without intermission, settled on the shingle not far from us. Presently we saw a downy young one running towards it. As the chick ran it kept dipping its tail (which showed up conspicuously white) exactly like an old bird; once it fell over on its back among the stones and had difficulty in righting itself. As it reached the old bird, it puffed out its breast feathers and brooded it, at ten yards distance from where we were sitting. We then noticed a second youngster hurrying from

another direction to the old bird. When both young had been brooded for some minutes the parent got up and flew across the burn. We noticed that the young, though not many days old, were able to search for and pick up food for themselves and received no assistance from the parent. The old bird was now calling again and the two young were moving towards it. First one and then the second arrived at the burn, took to the water without hesitation and swam easily in the slack water, but though swept down where the current was rapid, managed to land on the opposite side and made their way to where the parent was calling, and were then again brooded. Meantime the second bird appeared for the first time on the shingle on our side of the stream and called up two more chicks. The same performance was gone through till at last all four chicks had crossed the burn and made their way along the shingle up-stream till almost out of sight. I think, however, that the two lots of young must have joined forces with one parent in charge of the family, as presently one of the adults appeared and took up a position on a peat hag about fifteen feet up, and settled down in silence to watch us from this commanding site, giving the alarm directly we moved.

It is interesting to note that though in the first case the four young were scattered over the same area, only two responded to the call of the first parent, the other birds apparently remaining quiescent, but coming at once when the second parent called. The division into father's and mother's chicks (at any rate in emergency) has, of course, parallels in other species.

F. C. R. JOURDAIN.

SANDWICH TERNS IN CUMBERLAND—LARGE INCREASE.

FEW seasons pass without the nesting of Sandwich Terns (*Sterna s. sandvicensis*) among the sand-hills at Ravenglass in Cumberland, their numbers fluctuating, but this season (1932) they have increased enormously and beaten all previous records. Between 365 and 370 pairs nested there this year, as compared with about 70 pairs last year and a mere dozen in 1930. The largest colony numbered 170 nests, and the second largest 71. There were no clutches of three this year, but one of that number last year.

This remarkable increase is probably due to the larger of two colonies in north Lancashire, a few miles away, being wiped out by a colony of Lesser Black-backed and Herring-Gulls, which only became established there five years ago. These robbers broke practically all the eggs and only 21

hatched out, so that probably the Terns moved north to Ravenglass.

The Sandwich Tern is always an early arrival at Ravenglass, three arriving there this year on March 8th, the same date as last year.

H. W. ROBINSON.

MORTALITY AMONG YOUNG COMMON TERNS.

IN Vol. XXV., p. 135, I gave the percentage of deaths of young Common Terns (*Sterna h. hirundo*) in a north Lancashire colony for the last three years as judged by the number of ringed ones recovered on the ground.

This year the mortality was greater than ever.

1929	460 marked,	percentage of dead	=	4.13
1930	610	„ „ „	=	4.87
1931	355	„ „ „	=	2.81
1932	549	„ „ „	=	5.44

In a near-by colony of Lesser Black-backed Gulls the death rate was enormous, over 120 dead chicks being counted, but only 14 ringed ones.

H. W. ROBINSON.

ROSEATE TERNS WITH THREE EGGS.

IN the *Practical Handbook of British Birds*, under Roseate Tern (*Sterna d. dougallii*), p. 707, is this statement "Eggs—two, but often one only (evidence of three in British Isles unsatisfactory)," etc.



Roseate Terns changing over. Owners of three eggs.

In June, 1932, I visited a large Irish colony of Roseate Terns. Among the many nests were two, each containing three eggs which were, undoubtedly, Roseate Terns'. To make quite certain I watched the owners on to the nests and after photographing a Roseate sitting on three eggs and a pair changing places photographed one of the nests.

I was, in my hide, within four feet of the nests. I could not mistake the birds, particularly as there were dozens of other Roseates round me. Moreover, the length of the tail in the photograph proves the species.



Three eggs in Roseate Tern's nest.

The grass had to be pressed back in order to photograph the eggs as they were in a sort of alcove, an arrangement which I found was not unusual. This makes the nest photograph look different from that with the parent birds.

The eggs had every appearance of being a clutch, all were similar in colouring and marking and typical of the species. And though one looks a little short in comparison with the others, it was longer than an average Common Tern, of which species no nest was near.

GEO. MARPLES.

BLACK GUILLEMOT IN PEMBROKESHIRE.

On July 15th, 1932, I disturbed a Black Guillemot (*Uria g. grylle*) from the sea a few yards from the point marked on the

ordnance as Wooltack Point on the north side of Jack Sound. I followed it in my boat, as it had settled again at some distance, but it eventually flew off in a north-westerly direction.

This is the third recent occurrence in Pembrokeshire: Messrs. Oldham and Lloyd record one near Ramsey Sound, July 16th, 1925 (*British Birds*, Vol. XIX., p. 256), and Miss C. M. Acland watched one near St. David's Head on June 18th, 1924 (Vol. XVIII., p. 143). These dates are very close, and seem to be significant of a summer movement, probably of immature birds.

R. M. LOCKLEY.

ROSE-COLOURED STARLING IN DEVONSHIRE.—Colonel R. M. Byne informs us that he had good views, both flying and perched, of a Rose-coloured Starling (*Pastor roseus*) in his garden at Exmouth on August 4th, 1932. As the head, neck, wings and tail showed black and the rest of the body pink, the bird was no doubt an adult. M. A. Mathew (*Birds of Devon*) gives details of some twenty-three occurrences in the county, but there seem to be no recent records.

BLACKBIRD USING PREVIOUS YEAR'S NEST.—With reference to Mr. C. Oakes's note on this subject (*antea*, p. 98), Miss O. S. Wilshere writes from Kirby Muxloe, Leicester, that she has known several cases of this, and gives details of three instances of which she has records. In the first the same nest was used by Blackbirds (*Turdus m. merula*) in 1928 and 1931; in the second the same nest was used in 1928, 1929 and 1932 (possibly also in 1931, but no definite record of this). A third nest was used in March, 1930, and May, 1932. The nests were apparently re-lined in each case. Miss H. Terras also informs us that a Blackbird's nest, built at Mickle Trafford, Cheshire, in 1929, was used for rearing two broods in that year and in 1930 no fewer than three broods were reared from it, making a total of five broods from a single nest in two years.

Mr. G. A. Levett-Yeats also sends us some observations on a pair of Blackbirds which bred in the garden of his house in Surrey in very favourable circumstances for observation in 1932. As the hen had lost her tail she was readily recognizable. In this case the whole of the building of the nest was done by the female, as well as all the incubation, but the male helped diligently to feed the nestling, for only one was hatched out of the first brood. Unfortunately it was deserted owing to interference by workmen, and the dead young was thrown away.

By the end of April the hen returned to the nest and laid five eggs, four of which were hatched, the male as before assiduously helping to feed the young but taking no other part. Fledging period 14 days. On June 2nd the hen was apparently repairing the nest and laid again, but this time the cock occasionally visited the nest during incubation. Two young were hatched, both parents feeding them in turn, and left the nest on July 3rd. Although the hen appeared to repair the nest on July 18th no more eggs were laid, though she has regularly roosted in or on the edge of the nest—up to August 3rd. The tailless state of the hen in this case makes it certain that the nest was used by the same birds in one season for three broods of young.

STOCK-DOVE LAYING THREE EGGS.—Captain J. S. Reeve informs us that on June 28th, 1921, he took three eggs of Stock-Dove (*Columba ænas*) from a nesting block near Lincoln, from which a brood of two young had already been reared, and on September 19th, 1925, also found another clutch of three eggs in the same block. This, together with the case reported (*antea*, p. 99), brings the number of recorded instances of three eggs up to at least sixteen in the case of this species.

GREEN SANDPIPER IN ORKNEY.—Mr. Duncan J. Robertson informs us that he saw a Green Sandpiper (*Tringa ochropus*) on a moor on St. Ola, Orkney, on August 13th, 1932. The bird has been recorded very rarely from the Orkneys, although it has occurred fairly frequently on Fair Isle.

BLACK TERN IN LANCASHIRE.—Mr. A. J. Ross informs us that he watched a Black Tern (*Chlidonias niger*) "hawking" over a tarn at Scorton on June 9th, 1932. The bird was not seen after this date, but had been observed near Carnforth in the latter part of May.

LETTERS.

COLORATION OF SOFT PARTS OF CERTAIN YOUNG WADERS.

To the Editors of BRITISH BIRDS.

SIRS,—With reference to the notes by Mr. Walpole-Bond and Mr. C. Oldham (*antea*, Vol. XXV., pp. 337 and 364) on this subject, I should like to point out that nestling Ringed Plovers (*Charadrius h. hiaticula*) and nestling Redshanks (*Tringa t. totanus*), when first hatched, have legs and feet of a lead-colour, although when in juvenile plumage both species have legs of a yellowish colour. The nestling

Oyster-Catcher (*Haematopus o. occidentalis*), when first hatched, has legs and feet of a stone-grey colour; its bill is coloured as follows: upper mandible blackish, lower mandible tip blackish, base brown-yellow.

R. H. BROWN.

NOTES AND BEHAVIOUR OF GREEN SANDPIPERS.

To the Editors of BRITISH BIRDS.

SIRS,—We were pleased to read Mr. H. G. Alexander's letter regarding the above (*antea*, p. 139) and to find that his interesting notes confirmed our observations in one or two particulars. It is to be hoped that other observers who have any similar field-notes, confirmatory or otherwise, will also give your readers the benefit of them.

Since the last date mentioned in our paper, April 24th, 1932 (*antea*, p. 46), we have visited the reservoirs regularly each week, and one bird has been seen on each of the following dates.

On June 19th one was flushed three times, and only on the first occasion did we hear any note, when it called "*kwee-weet*" as it flitted off low across the water. The third time it towered, but apparently silently, and disappeared.

On July 3rd one that called "*klee-klee-klee-weet*" as it flew off, alighting again within sight, and, when again flushed, it rose silently and flew off just skimming the water.

On July 24th and August 28th one that rose silently and flew off low across the water.

We have now seen Green Sandpipers on these reservoirs in every month of the year with the exception of May. It is, however, possible that birds may have been present last May during the last two weeks of that month and the first two weeks of June, for after failing to find any from April 24th to May 15th, we rather unwisely came to the conclusion that they had finally departed, and therefore made no extensive search for them until we accidentally flushed one again on June 19th.

GEOFFREY C. S. INGRAM and H. MORREY SALMON.

SIRS,—With regard to the notes on this subject by Messrs. Ingram and Salmon (*antea*, p. 41) and H. G. Alexander (*antea*, p. 139), my experiences with the Green Sandpiper in the Solway Firth area are that most birds when disturbed, and especially if suddenly disturbed, fly up with shrill piercing alarm-notes that merge into the triple call-note (*klui-wit-wit*) as the birds mount high into the air and fly away. Only a few birds rise up silently and mount high into the air, and only a few, after rising with clamour, settle again within sight. On August 31st, 1929, a Green Sandpiper, when suddenly disturbed from a fresh-water creek on Rockcliffe Marsh, flew up with shrill clamour, its alarm-notes ending in a series of rippling notes.

R. H. BROWN.

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THE GREAT CRESTED GREBE ENQUIRY, 1931, (PART IV.)*

BY

T. H. HARRISSON AND P. A. D. HOLLAM.

VII.—RELATIONS (*Continued*).

(b) **Territory.**

(1) *General Considerations.*—The tendency of any species to establish an exclusive territory, into which no other bird of the same species may enter, is of extreme importance in controlling the numbers and distribution of the species. This is well demonstrated by Great Crested Grebes, where a pair occupy a small lake, say seven acres, and other birds may arrive with the intention of breeding. Normally the first pair attack the intruders, persistently driving them round and round for days. Usually this lasts for a week or so (as much as seven weeks in two cases) after which the extra birds leave—for nesting under such circumstances is somewhat difficult! Cases of this sort are common in the southern counties, where there is only a moderate vegetation and fish supply on the ordinary lake. On larger lakes the same thing is found—for instance at Gatton (Surrey) and Virginia Water (Berks.) where, despite the large population, there is a clear territorial definition between each pair, with only a few areas of overlap which appear to be found in many species. Throughout England south of a line “drawn from the Wash to the Severn” it is usually true to say that the unit area of territory is somewhere about seven acres at the present time (1931), so that all things being equal a lake of 50 acres will tend to hold seven pairs; there are, of course, variations on both sides of this; unsuitable conditions may greatly reduce the density.

It is curious that in Norfolk, especially on the Broads, territorial struggles are more conspicuous than in any other county. There is almost day and night combat there, adjacent pairs constantly squabbling. This is undoubtedly due to the large numbers breeding, which have nearly reached saturation point. Only by constant warfare can individuals maintain a sufficient amount of feeding ground upon which to feed themselves and their young. Further, the advent of extra pairs would decrease proportionately the amount of food available

*This Part completes the Report, and Separates will be obtainable from the publishers after the publication of this issue at the price of 2s. 6d. See advertisement on the cover.

for all concerned, and this might prove disastrous ; therefore extra pairs must be kept out by the watchful efforts of each pair over its own piece of water.

On a few lakes in Cheshire, Yorkshire and other counties, territory (in the understood sense of the word) has largely disappeared and numbers of pairs feed and breed without hostility. Particular examples of this (in certain years) are Fritton (Suffolk), Fairburn (Yorks.), Rostherne and Tatton (Cheshire), Blagdon (Somerset), and Swithland (Leicester). In Warwick where numbers of pairs breed they are free to wander all over the lakes but they respect each other's nests.

Food-supply is undoubtedly the major factor in controlling territory, and under special conditions very small lakes may be colonized even in southern England—such as Blackpit (Bucks.) 3.5 acres, Latimer (Bucks.) three acres, Lindridge (Warwick) three acres and Island Pool (Worcs.) four acres. Mere pressure of numbers may make it essential for birds to attempt nesting on small lakes which are not really suitable ; the birds have got to go somewhere. Similarly, pairs may increase on a lake against all the efforts of the former pairs ; in such cases a margin of safety for the adults is always assured, because in any food shortage or other trouble the young will be the first to suffer. Often the numbers increase on a lake in this way to beyond the normal density ; a bad year—drought, food shortage or exceptional rain—means disaster, and a decrease back to the old numbers follows. This is demonstrated over and over again in our county figures. The final development of atrophied territory is a system of colonial nesting.

(2) *Colonial Nesting*.—Only under ideal conditions, more or less stabilized, can territory so far relax as to enable completely free association in a true community. The most striking community in the British Isles is that recorded in Ireland by C. V. Stoney and G. R. Humphreys (*B.B.*, XXIV., p. 170) : in one sedge clump, 15 by 12 yards, about 29 nests of Great Crested, Black-necked and Little Grebes were found ; in another 30 nests. In other places on this lake there were similar crowded nests of Great Crested and Little Grebes alone, the former much the more abundant.

The only true case of colonial nesting in England is that of Stanford Reservoir (Northants.) another very shallow water ; in 1930, eighteen months after the filling of the reservoir, and although there was hardly any cover, ten or twelve nests were counted in a compact group and others only a yard or two apart ; forty-four adults were present in June, 1931. At

Fairburn (Yorks.) this colonial condition has nearly, but not quite, been reached; Fairburn also is very shallow and of recent formation—two factors of probable significance. At Hornsea (Yorks.) six nests with eggs were found within six yards during 1887 (*Zool.*, XI., p. 304).

Interesting as throwing light on the development of a colonial system are notes on a furious territorial combat on the Lower Bittell Reservoir (Worcs.) in 1921. Four pairs had tremendous battles in an attempt to occupy a creek with willow anchorage; after constant hostility three pairs finally established themselves, nesting only two yards apart, the closest ever observed in Worcester (H. G. Alexander). No cases of colonial nesting are known in Wales, Scotland or Italy. Fr. Haverschmidt informs us that despite the large numbers in Holland the only colony is at the mouth of the River IJssel ("Keteldiep") in the Zuiderzee, in fresh water. This is not a large colony and probably holds about 25 pairs; there is a note of it in *Ardea*, XVI. (1926), p. 82.

Several remarkable colonies in Sweden eclipse all other records of this sort, although the species was rare in Scandinavia until 1880. Hundreds nest, and have done so for many years, in the province of Västergötland and on Vänern and Storsjön. At Grumsfärden, in south Värmland, where two pairs bred in 1858, five hundred were counted in 1900. At Lake Vallentuna one hundred Grebes may be seen together at one time, and one year in one inlet of the lake not less than 1,500 eggs were taken! This astonishing colonial abundance has been a feature of the country for more than forty years, and has been fully described by Lönnberg, Jägerskjöld and Kolthoff.

In Tibet large numbers breed colonially on the Kala Lake, and F. Ludlow examined a closely packed colony of 50 nests some 200 yards from the shore in 1924 (and again in 1926). The nests were covered as in England and nearly all had four eggs. On several nests male and female were observed sitting side by side—a habit unknown in Britain. This again is apparently a shallow lake. Similar nesting is reported from the Yamdrok Tso (F. M. Bailey), and from the lakes of Sughuchak, west of Yarkand in Chinese Turkestan (*Stray Feathers*, IV., p. 203).

In his study of the high altitudes in Ladakh and Sikkim, Col. R. Meinertzhagen found a colony of fifty-eight pairs on the Tso-Kar Lake at 14,900 feet. There are no reeds of any kind on this lake, and nests are very conspicuously placed

twenty to one hundred yards from the bank, in two to four feet of water. Some nests were touching. Stomachs of three birds examined contained nothing but *Gammarus*.

So that in Asia and India we have the same species and sub-species, *Podiceps c. cristatus*, forming colonies on just the same sort of lake as in Europe—shallow water, often with hardly any cover and only weeds for anchorage. Obviously depth is the vital factor here, cover of little importance.

(c) Relations with Other Species.*

In spite of many cases of the Great Crested Grebe existing with other species in various relations in different parts of the country, the bulk of the information shows it to be a friendly, rather placid bird, seldom the aggressor except under provocation. During the period when the nesting area is first taken possession of, and the right to nest there established, the Grebe is more sensitive; later, when the position is secured, any species may pass unmolested. With such a powerful and deadly torpedo method of attack protection should be easy. But records show that the birds are singularly incapable of defending their own nests against the two main enemies—Swans and Coots—a weakness which may be in some measure explained if it is allowed that from beneath the surface the bird has some difficulty in discriminating between its own nest and the attacking party, especially if this is among reeds and against the light. There are pathetic records of Grebes watching Coots pulling their nests to pieces, and apparently unable to do anything about it.

In considering the following records of relations, it must always be remembered that positive data tends to be mentioned while negative data does not, and that negative data is not fairly represented in many cases.

(1) Coot (*Fulica atra*).—Coots are probably the worst enemies, but their attacks are almost entirely on nests and eggs, seldom on young and adults. We have received reports of aggression by Coots at twenty-one lakes, friendly relations at ten, neutral at seven, and attacks by Grebes at four (all cases where Coots came too close to nests).

At Woburn (Beds.) and four lakes in Somerset, and at Eywood (Hereford), an increase of Coots about 1927 caused corresponding decreases of Grebes, Coots becoming a positive menace. But at Island Pool (Worcs.) and Hornsea (Yorks.) a decrease in Coots during 1927 led to an increase of Grebes.

* Written in conjunction with J. C. S. Ellis.

At Thornycroft (Cheshire) Coots are presumed to have driven away Grebes in July. But the main effect of this aggression is not so much a decrease of Grebes as the constant destruction of nests and eggs. Thus at Woburn (Beds.), Swithland (Leics.), Stanford (Northants) and Ragley Park (Warwick) nest-material is stolen. At Dunorlan (Kent), Burley (Rutland), Rock Pond (Notts.), Crabbett (Sussex) and Lower Bittell (Worcs.) eggs broken or stolen. Slight interference is noted at Elstree (Herts.) and a Coot was seen to eat the old egg-shells from a Grebe's nest on June 18th at Great Hallingbury (Essex).

In Somerset an extraordinary state of affairs prevails. At Litton on two occasions Coots caused Grebes to desert by laying in their nests after the Coots' nests had been destroyed, and in 1929 prevented breeding altogether. At Marston since 1927 Coots have persecuted Grebes mercilessly and prevented them from becoming established. At Blagdon on May 9th an adult Grebe was dead beside its nest, probably killed by a Coot. On June 20th a Grebe was *incubating seven eggs of a Coot in a Grebe's nest*, and covered the nest when it left; and a few days later another Grebe was *incubating two eggs of a Coot in a Grebe's nest*. Further, on May 27th, 1919, a Grebe's nest held three eggs—two Grebe and one Coot; in 1930 a nest contained five eggs—three Grebe and two Coot. Finally, to confirm the absolute insanity of the two species in Somerset, both in early June, 1930 and 1931, a Coot turned out the eggs from a Grebe's nest and incubated its own there.*

The only cases of Grebe attacking Coot are where the latter have come too close to a nest, and have been mildly repulsed. This has been noted at Luton Hoo (Beds.), Lower Bittell (Worcs.), Fritton (Suffolk) and Ripley (Yorks.). Relations are noted as friendly or neutral at several Cheshire meres, Esthwaite (Lancs.), Ravensthorpe (Northants), in Notts., Chard (Somerset), Slaugham and Warnham (Sussex), several lakes in Warwick and at Bretton (Yorks.). At Fleet Pond (Hants.) and Burghley (Northants) Coot and Grebe nested side by side.

There would seem to be four main phases of Coot aggression :—

- (1) Digging at Grebes' nests without doing any damage.
- (2) Looting nests for material.
- (3) Pulling nests to pieces.
- (4) Destroying the eggs.

*These data are sent by L. P. Ashton, J. Birkett, L. A. Hawkins, S. Lewis, C. J. Pring, W. C. Taunton and A. Tyte.

(1) and (2) can be explained as natural actions on the part of Coots hunting for food and nest material, merely not appreciating any special difference in nor feeling any special respect due to the Grebes' nests as compared with adjacent vegetation; (3) and (4) might well be exuberant developments of (1) and (2), and the way in which the eggs are often broken without being eaten or removed to some extent confirms this hypothesis. No specific hostility would be involved in these apparently hostile actions. They would be the simple expressions of the Coots' ordinary habits, irrespective of property and not appreciating the significance of that property unless and until they were driven off it by the "rightful owners". After all, birds do not involve themselves in questions of morality or legal ownership. We stress the point because we think that there is little evidence of what a human being calls "hostility" in all this and that several interpretations are possible. We wish to make it clear that when we use the word "hostility" we use it with these limitations. Ornithologists are much too ready to favour a simple (and often erroneous) anthropomorphic explanation. Only when Coots become too numerous do they normally affect the Grebes; then the Grebes, as the less aggressive species, invariably suffer. But where there is no pressure Coots and Grebes are often perfectly friendly—there is then no point or purpose in "hostility".

(2) Mute Swan (*Cygnus olor*).—Second to the Coot as an enemy is the Mute Swan. Coot aggression is mainly confined to nests and eggs. Swans, on the other hand, persecute adults and young. Of reports received, Swans are the aggressors on twenty-three lakes, relations are friendly on fourteen, neutral on three, and Grebes seen to attack Swans on two.

Swans are not known to kill Grebes at any age. Their main influence is through petty persecution, which may result in Grebes deserting the lake or failing to rear young. There is one case of a Swan breaking eggs at Stubben Court (Derby), and others of destroying nests at Knowsley (Lancs.) and Belvoir (Leics.). Grebes were driven off the water or prevented from nesting at Southill (Beds.), Llangorse (Brecon), Hardwick (Derby), Wormleybury (Herts.), Ditchley (Oxon.), Longford and Walcot (Salop), Ripley (Yorks.) and in the Lake District. Big increases of Swans corresponded with disappearance of Grebes at Thoresby (Notts.) and Malham (Yorks.). Conversely, at Belvoir (Leics.) the elimination of Swans was followed immediately by a considerable increase of Grebes (The Duke of Rutland). Grebes were harried by

Swans at Braydon (Wilts.) and Lower Bittell (Worcs.). The two species avoid each other at Rostherne (Cheshire), Fritton (Suffolk) and Bretton (Yorks.). They are friendly at Luton Hoo (Beds.), Tabley and Redesmere (Cheshire), Ewhurst (Hants.), Whitemere (Salop), Dimmingsdale Pool Hall (Staffs.), Redgrave (Suffolk), Slaugham, Fen Place and Warnham (Sussex), Berkswell, Coombe, Packington and Edgbaston (Warwick). Also at Thoresby (Notts.) the two nested twelve feet apart, though an increase of Swans was detrimental to Grebes here; at Luton Hoo nests were within two yards and at Pool Hall within ten feet. Finally, Grebes have been seen to attack Swans at Longford (Salop) and Ravensthorpe (Northants.), this last a report at second-hand.

(3) Canada Goose (*Branta canadensis*).—This introduced species has spread a good deal in England during the past few years, and continues to do so in the southern counties and elsewhere. Aggressive actions directed against Grebes are reported from Tingrith (Beds.), Grebes driven off in June, 1931; Woburn (Beds.) and Walton (Yorks.) have caused a decrease; Ripley (Yorks.), Grebes driven off in 1920; Great Hallingbury (Essex), chase Grebes. The two species avoid each other and are neutral at Gatton (Surrey) and Bretton (Yorks.), while relations are said to be friendly at Tabley (Cheshire), Ewhurst (Hants.), Holkham (Norfolk), Redgrave (Suffolk), and Godstone (Surrey). As long as there are not too many Canada Geese they are not troublesome.

(4) Mallard (*Anas platyrhynchos*).—There is one record of a Grebe torpedoing a Mallard which came too near a nest at South Walsham (Norfolk), but elsewhere relations are perfectly friendly. Only when several hundred hand-reared duck are turned down on a lake during the summer are Grebes affected in any way; then they may be crowded out and compelled to leave. This has happened in the last three years at Osmaston (Derby), Gatton (Surrey), Shillinglea (Sussex) and Sandringham (Norfolk); at the last a pair appeared the first year Mallard were not artificially reared and went when numbers were reared again in the following year. The only known case of aggression by Mallard occurred at Belton (Lincs.) in 1900, when a Grebe's nest was usurped, the Grebes leaving forthwith.

(5) Wigeon (*Anas penelope*).—One of the very few cases of a Grebe making a calculated attack on another species is that reported by A. K. Gibbon from Blenheim (Oxford). Early in 1927 a party of four or five Wigeon was seen to drift,

more or less asleep, close to a pair of courting Grebes. Both birds dived, and a moment later one Wigeon leapt into the air, beautifully torpedoed. Each was similarly treated until all had moved away. This amusing affair was probably more an outlet of erotic emotion, play and display, than anything else.

(6) Tufted Duck (*Nyroca fuligula*).—Relations are friendly or neutral. The two do not commonly associate at all closely, but tolerate each other. In Surrey both breed on several small lakes, and Tufted Duck may swim very close to Grebes and their young without any sign of suspicion or resentment on either side.

(7) Common Pochard (*Nyroca ferina*).—As with other duck, relations are negative, but we have seen Grebes dive at them as if in play on the London reservoirs.

(8) Common Scoter (*Oidemia nigra*), (9) Velvet-Scoter (*Oidemia fusca*).—These two ducks may often be seen in close association with Grebes at sea, particularly off the coast of North Wales, Northumberland and Kent (Dungeness). Also inland on the Cheshire meres. The Scoters are almost entirely mollusc feeders, so that there is no food competition with Grebes.

(10) Ornamental Water-Fowl.—When numbers of exotic ducks and geese are turned on to a lake the effect may be damaging to other species, and Grebes have suffered in this way at several lakes in Bedfordshire and at Sunninghill (Berks.), when a vicious Indian Whistler drove a pair of Grebes off the lake. But at Holkham (Norfolk) large numbers of ornamental fowl do not affect other birds.

(11) Little Grebe (*Podiceps ruficollis*).—It is unfortunate that little data is available on relations with the Little Grebe. It seems likely that it is the only species taking similar fish and insect food on inland waters. The scanty information at our disposal (from Oxon., Berks., Bucks., Hereford and Surrey) suggests that to some extent the two tend to be mutually exclusive. The Dabchick is always more of a shallow water feeder and thus its feeding grounds are rather different. On fair-sized lakes with plenty of food all would be well. But on small lakes with moderate food-supply competition becomes more important. Certainly there is no direct hostility or aggression; it is all a matter of the available supply, and if it is small the species which can get the most of it. In the present state of our knowledge further speculation is idle and probably incorrect.

(12) Red-throated Diver (*Colymbus stellatus*).—Grebes occasionally form a loose association with this and other divers at sea. They have been observed to do so in Kent, Norfolk, North Wales and the Channel.

(13) Black-headed Gull (*Larus r. ridibundus*).—This Gull is commonly parasitic on various aquatic species, including the Great Crested Grebe. On the London reservoirs, particularly the Hampton group, they wait upon Grebes and viciously attack them about the head as they come up; the Grebes may then drop their fish, regurgitate it, or dive again and be once more attacked. The Gulls will even perch on a Grebe's head for a moment. The same thing happens on several Cheshire meres. This is chiefly a cold-weather habit, somewhat local; it seems to be developing and increasing in extent. Lakes with Gull colonies are usually unsuitable and too overcrowded for Grebes. But at Fairburn (Yorks.) and Scoulton (Norfolk) the two flourish side by side.

(14) Moor-Hen (*Gallinula chloropus*).—Entirely friendly relations are found; the Moor-Hen keeps to the water's edge and in its retiring way is no trouble. There is, however, one case of a Moor-Hen dispossessing a Grebe of its nest and building its own nest on top; this was at Woburn (Beds.) prior to 1914 (Duchess of Bedford).

(15) *Other Species*.—Neutral relations are noted with Cormorant, Shag and Guillemot at sea. The depredations of Rook (1), Carrion-Crow (9), Hooded Crow (1), Magpie (1) and Heron (2) have been considered under enemies, and are not involved in the question of relations, as they are terrestrial species and the relation is wholly one-sided. We have seen Grebes in winter on the London reservoirs torpedo several species of duck, a Goosander (*Mergus merganser*) and a Slavonian Grebe (*Podiceps auritus*).

(16) *Summary*.—These records can be summarized briefly by giving numbers of lakes at which different relations have been noted :—

Species	Grebe Molested.	Neutral.	Friendly.	Grebe hostile (nest protection).
Mute Swan ...	23 +	3	14	2
Canada Goose ...	5	2	5	0
Mallard ...	6	+	+	1
Other Ducks ...	2	+	+	1
Black-headed Gull	6	2	0	0
Coot ...	21	7 +	10 +	4
Moorhen ...	1	+	+	0

Thus the number of times when the Grebe is attacked to those in which the Grebe is the attacker is 64 to 8, or 8 to 1. And of the eight cases where Grebes attacked seven were to drive off birds close to the nest.

Therefore it may definitely be said that the Great Crested Grebe is a friendly bird, mild and somewhat ineffective in protecting its own nest. Its formidable fighting equipment is comparatively useless against Swans, Geese, Coots and other aggressive species.

(17) *Competition*.—The only inland aquatic species which has food-habits anywhere near those of the Great Crested Grebe is the Little Grebe. The smaller species probably suffers in direct food competition on small lakes, but the extent of this is at present unknown. All other species breeding in the same habitat take vegetable, mollusc or insect food, very little fish. Another obvious competition is for nest-sites. This occurs to a small extent with Coots and Swans, to a large extent between individual Great Crested Grebes, as discussed under "Relations" and "Territory" respectively. An important cause of competition appears to be purely numerical—if Coots, Canada Geese or Mallard become numerous they exclude other species by mere numbers and activities.

The reason for the attacks of Swans is difficult to understand. They can gain nothing at all by driving the Grebes away. Their action may be a sort of perverted territorial instinct or merely the expression of a singularly aggressive and interfering nature. The fact that young Swans persecute the Grebes suggests the latter suggestion as the correct one.

(d) **Parasites.**

Major E. E. Austen informs us that the following Mallophaga have been recorded on Great Crested Grebes:—

Menopon tridens Nitzsch.

Colpocephalum dolium Rudow.

Degeeriella colymbina Scopoli.

Of endoparasites a great number are known, but Dr. H. A. Baylis tells us that no useful summary can be made out in the present confused state of knowledge on this subject.

VIII.—NEST-HABITS.

(a) **Share of Sexes.**

Both sexes assist in all the nesting processes, but the male is undoubtedly the harder worker. There is a definite division of labour in feeding the young. At first the young

are mostly carried by one sex (the male according to C. J. Patten and T. A. Coward, the female in our Surrey observations) and fed by the other, but after about a week the male and female tend to feed different young. All the young may go about together, they may all attempt to take food from the same adult; careful observation shows, however, that nearly always each parent deliberately feeds one or two young and no more, so that there is a definite distinction between "male's young" and "female's young". If there is only one chick the male tends to do most of the feeding.

On June 26th, 1920, two male Grebes were seen sitting on the same nest at Blagdon, Somerset (S. Lewis). There are no records of one parent disappearing and the other continuing to nest unaided; it is doubtful if this would ever occur in view of the interdependence of the sexes. But a curious record comes from Bretton (Yorks.) where a female continued to sit on two eggs for nearly seven weeks after the other egg had hatched; during the whole of this period the male was only once seen to approach the nest, and he took over the whole business of feeding the youngster (J. C. S. Ellis). Julian Huxley has stated that the female attends to all the young when they are well grown, but this is certainly incorrect of all cases observed during 1931. Indeed, we have seen the male attack and drive away "the female's young" and *vice versa*.

The young begin to have some idea of diving when about six weeks old, but do not feed themselves until about nine weeks. The parents teach the young to dive by dropping fish just as the young are about to take them; the young may continue to be fed long after they can feed themselves. Young bicker between themselves, and chicks a week old may make furious attacks upon each other. After about two weeks the adult gets tired of carrying the young, and constantly jerks the chicks off its back into the water, until they gradually weary of trying to get on (though they continue with heart-breaking persistence, scrambling up by the parent's rump, only to be thrown off a few seconds later). It seems possible that the birds pair for life, though there is no direct evidence on this point.

(b) Courtship.

Courtship has been very elaborately studied by Julian Huxley, Edmund Selous and others. A few points remain to be made, and have some significance in connexion with this enquiry. The bowing, bill crossing, weed display, ghost-dive

ceremony is well known, but it is not confined to the courtship season. Traces of it appear at all seasons, sometimes at unexpected moments, and we have seen a type of courtship in December. Birds are often seen going through courtship ceremonies at sea in February, and after eggs have been laid inland in spring. Courtship should be considered as a link, a constantly renewed protestation of faith, as well as an affair of mate selection. Fighting during the spring contains many courtship gestures, as do all expressions of anger and fear. This is clearly brought out in D. Gunn's account of fighting methods in the Great Crested Grebe (*Brit. Birds*, XXII., pp. 26-30).

(c) **Nest-Sites.**

In general nests are placed in sedges and reeds at the water's edge. The type of cover used may have a big effect in the date of laying and hatching—as much as six weeks in Norfolk—according to the length of time it takes to grow. In Cheshire, Essex, Warwick and elsewhere, where there is no cover and the water is favourable, the first clutches are often unsuccessful because the eggs are too exposed and obvious. In Worcester nests are often unsuccessful until mid-June, when *Polygonum amphibium* is well grown. On the Broads they tend to nest far back in thick *Phragmites communis*. Nests are often attached to the trailing branches of willows, alders and other trees touching the water. In Northampton and Leicester nests are commonly placed in very obvious localities. In the absence of any anchorage nests may be placed in remarkable places—for instance *on top* of the concrete banks at Staines and Barn Elms Reservoir (London), on rafts at Leg-of-Mutton Pond, Woburn (Beds.). In 1899 there was a nest in a tree stump at Redesmere, Cheshire, where there is plenty of cover. These freak cases only occur when there is much local pressure, which is nearly always confined to reservoirs frequented by Grebes. The species can adapt itself to almost any circumstances.

There is hardly any cover other than *Polygonum amphibium* which does not come up until May at Lower Bittell Reservoir (Worcs.) where nests are quite exposed in almost open water. *Polygonum* and flowerheads are used at Shearwater (Wilts.). At Blagdon Reservoir (Somerset) pairs nest in the beds of giant rush, which is mostly unsuitable for nest material, so that much moss is used; at Barrow Gurney Reservoir (Somerset), where there is no cover or vegetation at all, moss

is also used. Startop's End Reservoir (Herts.) has for its only cover a bed of *Glyceria*, where a pair often nests; nesting occurs in *Persicaria*, which grows rather late and delays nesting at Walton Reservoir (Cheshire). At Hawley Pond (Hants.), Coombs Reservoir (Derby), Dowdeswell Reservoir (Glos.), persistent efforts at breeding are rendered useless by the lack of anchorage. At Stoke Newington Reservoir (Middlesex) a nest was to be seen gently wandering all round the reservoir in 1929.

(d) Nesting Dates.

There is a remarkable range in nesting dates for this species, eggs being recorded in mid-March, young still being fed in mid-November. Two nests were reported on February 21st, 1921, on the Broads (*Brit. Birds*, XV., p. 290), this remarkably early date being attributed to a special drought. Dates fluctuate largely in accordance with the nature and growth of available cover and rise and fall of water-level. But where suitable anchorage can be obtained, many nests are unconcealed when plenty of cover is available. This suggests that cover is only one of several factors which affect nesting dates. Records over a number of years show that nesting is consistently several weeks earlier at Eynsham Hall than at Blenheim Lake—less than three miles away (Oxford Ornithological Society). Possibly the hatching of the fish fry is a controlling factor. There appears to be no marked tendency for later nesting in the north, nor any noticeable difference in highland and lowland counties. Early nesting occurs mainly on sheltered lakes with a variety of cover and food.

Late nesting is largely due to constant interference. Few birds are more persistent in their attempts to breed in the face of every adversity. During 1931 records of the same pair making three attempts to hatch off came from Ruislip Reservoir (Middlesex), Lower Bittell Reservoir (Worcs.), Burley-on-the-Hill (Rutland) and Burghley House (Northants.). A new nest is very quickly made—at the rate of 100 cargoes an hour—and finished in less than one day, and the building of cock nests or spare nests in advance is noted by E. Selous (*Bird Watching*, 1901).

(e) Incubation.

The sexes share incubation which (according to four records received in 1931) lasts for 27-29 days. The eggs seem to hatch in quick succession although they are usually laid on alternate

days. Incubation sometimes (but not necessarily) begins with the first egg. In most cases the eggs are covered with wceds by a few rapid strokes of the bird's bill as it leaves the nest; this egg-covering is not used as an aid to incubation, as is often supposed. A male has been observed to sit regularly on covered eggs and to perfect the covering of the female which had left in a hurry and covered the nest badly (*Zool.*, XIII., p. 18).

(f) **Number of Eggs.**

Of about one hundred records sent in, clutches of four were in the majority, three being also numerous, several fives and two sixes noted; also ones and twos. Clutches of seven are very rare; one was found at Weston Turville (Bucks.) in 1907 (*Brit. Birds*, I., p. 327), and in 1908 and 1909 a clutch of six was laid at almost the same spot as the 1907 nest. Of fifty-one nests examined in Somerset during recent years by L. A. Hawkins, one, at Blagdon, contained seven eggs. The average of 100 British eggs given by Jourdain is 54.8×36.7 . Maximum 62.7×37.8 and 46.5×39 ; minimum 46.5×39 and 55.3×34 mm.

(g) **Number of Young.**

County	Average Young raised per pair					Number of pairs observed.
Leicester	2.6	18
Shropshire	2.5	12
Kent	2.4	8
Lancashire	2.3	8
Warwick	2.1	32
Middlesex	2.0	9
Lincoln	1.8	17
Suffolk	1.8	8
Worcester	1.6	10
Hampshire	1.5	10
Cheshire	1.4	12
Hertford	1.4	28
Surrey	1.4	29
Berkshire	1.2	24
Somerset	1.2	18
Wiltshire	1.2	12
Yorks.	1.1	6
Nottingham	0.9	27
Essex	0.9	19
Sussex	0.9	12
Northampton	0.8	50
Derby	0.8	12
Buckingham	0.7	24
Oxford	0.7	8
Bedford	0.6	18

In addition, the single pair in Northumberland raised three, the single pairs in Gloucester and Rutland no young. This makes 431 pairs raising 589 young, an average of 1.3 young per pair.

Three cases of five young were recorded—at Battlesden Park, Beds. (E. M. Nicholson), Compton Verney, Warwick (R. Hudson), and Agecroft, Lancs. (A. W. Boyd). The last is about as unsuitable a locality as could possibly be imagined. Five young were also reared at Colnbrook By-Pass Gravel Pit, Bucks., in 1930, and the whole family were still present on October 8th (Miss Longfield). Up to seven young have been reared by double-brooding in 1931, as discussed elsewhere. Often one chick is twice as large as another at three or four weeks old, though both were hatched, at most, one or two days apart.

(h) Double-Brooding.

There was at one time controversy regarding the possible occurrence of double-brooding in Great Crested Grebes. We have received twenty-five records of double-brooding, the majority of which are detailed and reliable. For past years these include Woburn (Beds.) several times, Osmaston (Derby), Braxted (Essex) 1929-30, Bonningtons (Herts.) 1928, Llyn Helyg (Flint) 1930, Bedgebury (Kent) *c.* 1926, Blackbrook and Staunton Harold (Leicester) both in 1930, Eynsham (Oxon.) 1927, Farncombe (Surrey) *c.* 1925, Burton Park (Sussex) 1928, and a lake in Warwick.

There are ten records for 1931 as follows :—

					Young in each brood.
Loscoe Dam, Derby ...	...	...	...	...	3 and 2
Doffcocker Lodge, Lancs. ...	...	...	...	...	4 and 3
Staunton Harold, Leics. ...	...	...	...	...	3 and 3
Holbrook Gardens, Suffolk ...	...	...	...	...	3 and 2
Litton, Somerset ...	...	...	...	...	2 and 2
Orchardleigh, Somerset ...	...	...	...	...	2 and 2
Swinfen Hall, Staffs. ...	...	...	...	...	1 and 2
Shearwater, Wilts. ...	...	...	...	...	1 and 4
Dringhouses, Yorks. ...	...	...	...	...	two pairs d-b.

It is interesting to note this habit occurring in two consecutive years at Staunton Harold and at Braxted, and also the recent tendency to double-brooding in Leicester and Somerset, the former having the highest young ratio in any county (2.6), the latter less than the average (1.2). It is rather remarkable that *all* the 1931 lakes above, except Staunton Harold, have been colonized *since* 1920. This is

probably important. For the occurrence of successful double-brooding postulates plenty of food, good conditions throughout the season, and so on. Ordinarily any one lake with such optimum factors will hold a number of pairs. If colonization has been recent and there are less pairs than the lake can actually support, a second brood of young can be reared; this would probably be impossible if the lake had its full quota of adults. Moreover, these pairs reared an average of about 2.5 young for *each* brood, which is equal to the second highest county; the environment must therefore have been particularly favourable, even if each brood is considered separately.

(i) Remarkable Behaviour on Land.

An extraordinary case of courtship on land is reported to us by R. M. Garnett. On March 18th, 1922, a pair on a Cheshire reservoir left the water and got in to a marshy spit of land, where the male displayed, stretched to full height, lowered his bill until it rested along his breast, then lay in shallow water and stretched his head along the surface.

At Rush Mere, Norfolk, a juvenile bird was picked up on a field beside the lake on July 21st, 1931; it was unable to move and had probably made a bad shot in learning to fly. It was put back, and became the centre of a lot of fuss among the other Grebes.

On Fenham Flats, Northumberland, in December, 1931, a bird asleep on the tide was gently left high and dry (C. H. Hartley).

At Bretton, Yorkshire, one nest is suspected of having a short approach partly across more or less dry land (J. C. S. Ellis). In the two cases of pairs nesting on the concrete reservoirs near London the birds had to shuffle up and down a sloping concrete bank with a gradient of about 1 in 3!

(k) Behaviour at Sea.

At sea Grebes commonly consort with Common Scoter (*Oidemia nigra*), Velvet-Scoter (*O. fusca*) and Red-throated Diver (*Colymbus stellatus*), keeping close off shore and diving in 1-2 fathoms. Feeding periodicity is not so marked as inland, and birds feed irregularly all day. By February some may be paired and courting off shore, and there are several records of staying on until June. Dive times and habits are more or less as inland, and the species seems perfectly adapted to marine conditions, including very bad weather.

IX.—SUMMARY AND CONCLUSIONS.

1. The Great Crested Grebe Enquiry, 1931, proved successful as a nationally organized effort in co-operative work. At least 1,300 persons helped in making the census.

2. Detailed data was obtained for every county in England and Wales, comparative information for Scotland (in detail), and many countries in Europe, Asia and Africa.

3. The species is prehistoric in Britain and was probably widespread some centuries ago.

4. It was scarce by the second half of the eighteenth century, long before the shooting of British specimens had begun.

5. From 1851 onwards there was a considerable killing of Grebes in England. There were about 42 pairs left in 1860. The Protection Acts, 1870-80, somewhat altered this, but the increase began before protection.

6. From 1880 onwards continuous colonization has taken place, the cumulative effect producing a graphic curve.

7. The amount of spread each year is very variable and shows some tendency to a five to six year cycle.

8. The increase has been widespread and European: it cannot be wholly a matter of human protection, and is probably part of a long term cyclic increase.

9. Some counties have already passed their optimum period, while others have only just been colonized.

10. There were about 1,154 to 1,161 breeding pairs in England and Wales during 1931. The total population, including non-breeders, was estimated at about 2,650 adult birds. Four hundred and eighty-nine occupied and 138 deserted sites were reported. There were about 80 pairs in Scotland.

11. The spread has in general been east to west, but Cambridge and Huntingdon held no pairs. South-west England has only recently been reached, the spread is, therefore, slow.

12. A comparison of 1930 and 1931 shows a decrease of 55 pairs in 1931, yet 22 new sites were colonized. This suggests a number of ideas, notably that since 1925 the increase has been a movement from old to new sites, not really an increase at all.

13. Deserted sites fall into groups, and may be considered as lakes that are unfavourable and are only attempted once or twice by prospecting pairs, and (the more interesting type)

lakes where the Grebes have left after many years' breeding, perhaps because they have greatly reduced the available food-supply.

14. The whole increase is thus seen to be an irregular affair with many complications, past as well as present.

15. Geological formations, with consequent effect upon drainage, animal and plant life, are found to be important in determining distribution. No other factors are commonly or widely met with as barriers, while the species displays a remarkable range of adaptability in food, nest-sites, territory, etc., under pressure.

16. Three hundred and forty-seven non-breeding adults were found in 1931, almost entirely on large reservoirs.

17. There appears to be a northerly movement at sea in winter, when the species is curiously scarce in many parts of southern Britain.

18. Migration is continuous throughout the summer, and there is a marked May-June movement. The species is resident within the British Isles, but must move from inland to the sea in winter, returning inland February-March.

19. The average weight is 2 lbs. 1 oz., males slightly heavier than females.

20. A pair of Grebes with young are estimated to take 300-630 lbs. of fish from a lake in one summer. The total fish consumption for England and Wales is estimated at 900,000 lbs. a year. At least 40,000,000 and possibly nearly 100,000,000 fish are believed to be taken.

21. Proportions of diet vary a great deal locally, but roach and perch seem to comprise most of the food. Other fish, insects, crustacea, molluscs, newts, tadpoles and vegetable matter are also taken.

22. Early morning and late evening are favoured for feeding, drinking mainly occurs after large fish have been swallowed.

23. The average dive noted is 26 seconds, dive-speed 2.4 m.p.h., flight-speed 37 m.p.h., and wing-beats per minute 240-290.

24. Preening is elaborate and is closely connected with feather-eating, a general habit in adult and young, with no obvious explanation, and perhaps psychologically developed from preening and courtship activities.

25. Human interference is the main cause of recorded deaths (36 per cent.), fish (26 per cent.) being second, though

only operative in the chick stage. The complex interplay of mortality factors is considered in detail.

26. Egg-covering and chick-carrying are special habits closely associated with mortality factors.

27. Territory is rigid, unless there is unlimited food or cover, when it may break down and develop into colonial nesting, though this is rare in Britain.

28. Relations with other species are important in determining numbers, especially Coots and Mute Swans, which damage Grebes' nests and young under some conditions. Relations with these and other species are considered in detail. The Grebe is seldom the aggressor unless its nest is threatened; even then it can seldom protect the nest. The number of "attacked" to "attacking" records is 64 to 8.

29. The reason for hostility is usually over-abundance of the other species (especially Coot), and not a question of competition or conscious hostility. But Swans appear to be unnecessarily aggressive.

30. Courtship occurs at other than courting seasons, and is not wholly a pre-breeding display. Courtship gestures and sequences are found in almost every action.

31. Male and female share breeding work throughout, and tend to develop "male's young" and "female's young" when the chicks are a week or two old.

32. Nesting dates are affected by nature and growth of cover; incubation is about 27-29 days, four eggs usual.

33. The average number of young raised per pair during 1931 was 1.3, Leicester highest with 2.6, Bedford lowest with 0.6.

34. Double-brooding is fairly common. Ten cases were reported in 1931, average 2.5 young in each of the two broods. All double-brooded lakes, save one, had been colonized since 1920.

35. Under exceptional circumstances Grebes will of their own accord go on land; several cases are described.

CORRECTIONS AND ADDITIONS.

- p. 67, line 21, and p. 103, line 29. For "Conde" *read* "Conte".
- p. 69. **Berkshire.** *H. J. R. Pease* should be in italics thus.
- p. 69. **Buckinghamshire.** Wotton Park. pairs in 1931.
For "2" *read* "2(?)". (B.W.T.).
- p. 70. **Cheshire.** For "Bosely Reservoir" *read* "Bosley Reservoir." (A.W.B.)
For "Marbury Mere, Great Butterworth" *read* "Marbury Mere, Great Budworth." (A.W.B.)
For "Wilton Flashes" *read* "Witton Flashes." (A.W.B.)
"Not in 1931." Insert "Higher Peover, 1 pr. 1919 and probably other years." (J. J. Cash.)
- p. 71. Lymm Dam. For "driven away by boating" *read* "no attempt since 1920. Disturbed." (J. J. Cash.)
For "Rhodes Heath" *read* "Rode Heath." (A.W.B.)
For "Sir H. Crossley, Bart." *read* "Sir K. Crossley, Bart."
- p. 71. **Derbyshire.** For "Fifteen waters held 20 pairs" *read* "Sixteen waters held 21 pairs."
- p. 72. Osmaston Park. This locality should be included among those occupied 1931, when 1 pair nested. One pair present in 1930 but nesting not proved. (Miss K. Hollick and Miss J. Wright, per F.C.R.J.)
- p. 72. **Devonshire.** For "Two waters held 2 pairs" *read* "One water held 1 pair."
Delete "Westbury Pool . . . 1 . . . 1931." (H.G.H.)
- p. 72. **Dorsetshire.** INFORMANTS. Insert Rev. F. L. Blathwayt.
- p. 76. **Lancashire.** For "Nine waters held 14 pairs" *read* "Eight waters held 13 pairs."
Delete "Bolton . . . 1 . . . 1930." (F.A.L.)
- p. 77. **Lincolnshire.** Fillingham. Year of Colonization. For "1913 +" *read* "1900 c."
L.N.E.R. Pit. Year of Colonization. For "1916 +" *read* "1900 c."
Norton Place. Year of Colonization. For "1920" *read* "1913 +".
Not in 1931. Hartsholme. Nested 1912 +.
(Rev. F. L. Blathwayt.)
- p. 79. **Northamptonshire.** For "Twenty-three waters held 67 pairs" *read* "Twenty-two waters held 86 pairs."

- p. 80, lines 5 and 29. Stanford Reservoir, pairs in 1931. For "3 + (?) " *read* "c. 22." (A.W.B.)
 Line 33. For "over 50 per cent." *read* "30 per cent."
- p. 81. For "J. M. McM. Fisher" *read* "J. M. McC. Fisher."
- p. 82. **Oxfordshire.** For "Kirtlington Hall" *read* "Kirtlington Park." (B.W.T.)
- p. 83. **Somersetshire.** For "H. W. Webb" *read* "H. V. Webb."
- p. 84. **Staffordshire.** For "White Stitch" *read* "White Sitch." (A.W.B.)
- p. 84 and p. 109, line 2. "Betley Mere." T. A. Coward suggests that this water was colonized before 1852.
- p. 85. **Surrey.** Godstone, Ivy Mill. This pair apparently moved to Godstone, Bay Pond, in June and reared a brood, after being unsuccessful at Ivy Mill. (F. Offen and Miss C. M. Acland.)
- p. 86. **Sussex.** Leigh Pond. For "1925 c." *read* "1905 c." (J. Walpole-Bond.)
Not in 1931. Insert "X ... 1 or 2 prs. 1923-5 on flooded level in north-east of county". (J. Walpole-Bond.)
- p. 87. **Warwickshire.** Warwick Castle, year of colonization. For "Recent?" *read* "Many years." (R.H.)
 For "A. W. Wallis" *read* "C. W. K. Wallis."
- p. 88. **Westmorland.** At Elterwater Lake in 1931 R. H. Brown observed either one or two pairs on various occasions between March and July, and watched a pair courting in April; and at Loughrigg Tarn in 1930 observed a pair several times in June and July, but had no opportunity to search for nests and did not see young ones. A. Astley assures us that no Great Crested Grebes have bred on either of these waters.
- p. 89. **Yorkshire.** Dringhouses. Year of Colonization. For "yearly" *read* "1921."
 Washburn Reservoirs. For "(3) Lindberg" *read* "(3) Lindley." (H.B.B.)
 For "Wasborough" *read* "Wosborough Reservoir." (H.B.B.)
 For "Hazlewood" *read* "Hazelwood Castle." (H.B.B.)
- p. 103. **Italy.** For "Camdia Canavevese" *read* "Candia Canavevese."
- p. 107. The first sentence needs correction. From their nature the most likely of the Cheshire meres to be ancient sites are the Knutsford-Northwich group, Ros-therne Mere (certainly), Marbury Mere, Great Budworth,

Pickmere ; the Delamere Forest group, possibly several but not Winsford Flash ; the south Cheshire group, Barmere, Marbury Mere, south Cheshire, and Combermere, the most likely of all. (A.W.B. and T. A. Coward.)

p. 113. (a) Cheshire. Deserted Sites 1931. For " 12 " read " 13."

p. 114. Derby. No. of Pairs 1931. For " 20 " read " 21."
Occupied Sites 1931. For " 15 " read " 16."
Deserted Sites 1931. For " 10 " read " 9."

p. 114. Devon. No. of Pairs 1931, and Occupied Sites 1931.
For " 2 " read " 1."

Lancs. No. of Pairs 1931. For " 14 " read " 13."
Occupied Sites 1931. For " 9 " read " 8."

Sussex. Deserted Sites, 1931. For " 3 " read " 4."

Yorks. No. of Pairs 1931. For " 63 " read " 65."

For " c. 1155-1162 pairs 490 sites 137 sites " read
" c. 1154-1161 pairs 489 sites 138 sites."

p. 118, line 12. For " 131 " read " 130." For " 137 " read " 138."

Line 15. For " 41 " read " 40."

Line 20. For " thrce " read " two."

Lines 22, 23. Delete " and Osmaston (Derby), 1904-1928."

Line 37. For " four " read " three."

p. 146. TROUT and CHARR. For " Llewellyn " read " Llyn Cwellyn."

CHARR. For " (*Salvelinus alpinus*) " read " (*Salvelinus perisii*)."

p. 148. (c). **Dive-speeds.** J. Vincent (Hickling, Norfolk) states that he can punt at five miles an hour and cannot keep pace with a Great Crested Grebe on a long straight dive.

p. 150. (h). **Flight.** J. Vincent states that at Hickling to see Great Crested Grebes flying is a daily occurrence. He considers that they are faster than Mallard and equal to diving ducks with a speed of 45-50 m.p.h. ; that they have a fine action and good turning movements and cannot be termed " poor fliers ".

p. 153. Mortality Factor. Pike. For " 5 " read " 54."

NOTES

BREEDING-HABITS OF CROSSBILLS OBSERVED IN HAMPSHIRE.

ON March 6th, 1932, in north-east Hampshire, I watched a hen Crossbill (*Loxia c. curvirostra*) gathering dead grass, the cock singing on a dead branch about 12 ft. above her. She flew into the tree to him, then both disappeared into the top of the next tree, a Scots pine about 50 ft. high, where it was too thick to see them. This was repeated three times in 15 minutes. On the 9th the hen appeared with the cock, carrying a large feather in her bill. After alighting in the neighbouring tree, they flew straight to the nest.

On March 16th I climbed to the nest, flushing the hen when within 10 ft. She perched on a nearby branch, calling rapidly a subdued "*chip, chip*". The nest, which contained four fresh eggs, was situated on a lateral branch very near the top, and invisible except from directly underneath. The foundation was of typical twigs, the cup consisting of grass plaited with moss and thickly lined with brown hen's feathers standing up above the rim and curling inwards. The tree was 30 yards from the main road, with houses on both sides of it.

On April 1st I saw a flock of eight birds behaving in a very curious manner. They were on the outskirts of a village, and flew round in a circle calling loudly, and repeatedly settled in a small group of firs. During this procedure they sometimes broke up into pairs, each pair fluttering nearly stationary in the air, appearing to court or fight, then flying back again to the same trees. They continued in this way on and off for three days, then left that place. I located what was probably the same flock about a quarter of a mile away, where they remained throughout April and May. There was no sign of breeding, though several were in red plumage.

On April 6th I watched a pair in a clump of Scots pines for two hours. The hen kept trying to break off twigs from the tips of the branches, while the cock, in red plumage, sang and fed alternately in the same tree. Twice he fed the hen, who fluttered her wings like a young bird. On the next day a gale was blowing and the cock was singing loudly on the leader of a 6-ft. seedling pine next to the nesting tree, the hen near the base gathering grass. Both flew to the nest,

which was just commenced, near the end of a lateral of the small pine about 20 ft. from the ground. Both birds always alighted on the same adjacent tree before flying to the nest with material. On the 11th the hen was moving her nest to the next tree. A big branch had been blown off just below the old nest and was hanging down the trunk. She made several trips to the first nest and carried beakfulls of grass to the new site. This nest was completed and quite typical, but was eventually destroyed by vermin.

This site was quite different from that of the other pair—there were no houses for half a mile, and the isolation was shared by the Hobby, numerous Wood-Larks, and the Dartford Warbler.

H. T. GOSNELL.

[That the cock Crossbill takes no actual part in the building of the nest, though very faithfully accompanying the hen, as described above by Mr. Gosnell (see also J. K. Stanford, Vol. XXI., p. 75; A. T. Wilson, Vol. XXVI., p. 22), seems to be usual. But in 1910, as the result of watching a number of nests in Kent, Messrs. J. R. Hale and T. P. Aldworth remark: "we very rarely saw the cock bird building" (Vol. IV., p. 212), and in the same year in Hampshire, after stating that the hen did most of the building escorted everywhere by the cock, I noted "two or three times in the course of half an hour we saw the cock carry stuff to the nest and work it in" (Vol. III., p. 401).—H.F.W.]

TWO-BARRED CROSSBILL SEEN IN YORKSHIRE.

DURING the spring of 1931 I had been visiting all the likely places for Crossbills in the neighbourhood of Goathland.

On May 3rd, 1931, I went to a very likely looking wood with some fine old Scots pines dotted about in clumps. As I entered, a single bird, about 50 yards away, flew up (I think off the ground) into a pine. I was looking out for Crossbills, but, even so, took this to be a hen Chaffinch on first sight owing to its white markings. The bird pitched on an out-stretching branch about 30 feet up. When I got a good view with glasses it was hanging back downmost, and was at work on a pine cone. I watched it for about a minute and got a very good view at 25 yards or less. The two white wing-bars were quite conspicuous, and it was an undoubted Crossbill with the usual "parrot" movements. Its size appeared to be that of a small Common Crossbill. The general colouring of the upper parts was a dirty greyish yellow, rather dark, with streaks; rump lighter and conspicuous in flight; underparts lighter. I saw nothing red.

I have no doubt that this bird was a Two-barred Crossbill (*Loxia leucoptera bifasciata*).

It suddenly flew off and I never saw it again, though I searched hard that day and three or four days subsequently.

It did not join other Common Crossbills which were within 100 yards or I should certainly have seen it again, as I watched these (a pair) all day, and on several other days later, when they were with about twenty more. W. S. MEDLICOTT.

SPOTTED FLYCATCHER REARING THREE BROODS.

My cousin, Mr. R. O. L. E. Jones, informs me that a pair of Spotted Flycatchers (*Muscicapa s. striata*) raised three broods this summer (1932) at the Hayes, Oswestry, Shropshire. The nests were on the top hinges of his garage door. The birds began to nest on the hinge on the left-hand side in mid-May and the third brood was reared in the same nest in mid-August. The second brood was in a nest on the right-hand side. There was only one infertile egg in the three nests.

For some years now two broods have been raised, one on each side, the right side usually first. This hinge has been a nesting-site for more than twenty years. In August, 1914, I spent much time photographing and watching the birds at a nest there, and some of my observations were published in *British Birds*, Vol. VIII., p. 114. In 1925 something upset the birds and the nest was deserted with three pure white eggs in it, one of them broken. This is the only case I have known of pure white eggs of this bird. We expected that this meant that the site would not be used again, and were very pleased to see a pair come to it again in 1926, but the female was evidently a different bird. J. H. OWEN.

NUMBER OF EGGS IN CLUTCH OF RING-OUZEL.

THE spring of 1932 was an exceptionally good one for the Ring-Ouzel (*Turdus t. torquatus*), and most of the favourite nesting-sites on the Pennines known to me were occupied and nests contained sets of eggs above the average in number. On May 28th, 1932, Mr. F. Taylor and I found a nest, a photograph of which is here reproduced, with an abnormal set of six eggs at Naden Valley, S.E. Lancs., four of them of the usual type, two somewhat incubated and two infertile, and the remaining two fertile, but pale and poorly marked. On the following day at Blackstone Edge, S.E. Lancs., we found a nest with five chipping eggs—the first of this number ever seen by Mr. Taylor in 50 years' experience on the moors of this district.

My own observations on Ring-Ouzels in the Peak of Derbyshire during the past eight years has shown that four is the regular number of eggs in a set, but this year I found the first set with five eggs—on May 4th near Buxton. Also on this day I saw nests with four, four, three and one eggs; the last two nests contained incomplete clutches which were made up to fours later, and between May 5th and May 31st I found six other nests each with four eggs. On May 8th, searching



Nest of Ring-Ouzel with six eggs.

at Blackstone Edge, Mr. Taylor and I found four nests with four eggs, and at various dates in different localities in S.E. Lancs., Mr. Taylor saw eight more nests with four eggs. Mr. H. Thornton tells us that near Rishworth Moor, W. Riding of Yorkshire, on May 16th, 1926, he saw a nest with six fresh eggs; the only one of this number out of nearly 300 nests personally examined, though he has seen nests with five eggs in this locality annually.

A nest of six eggs in S.E. Lancs. is exceedingly rare and one of five eggs is uncommon; yet on the Lancashire side of the Pennines, less than 30 miles N.W. of the places mentioned,

Mr. R. H. Wrigley (whose knowledge of the breeding Ring-Ouzel is unequalled) finds nests with five eggs quite frequently. He writes to me that once only has he found a nest of six eggs—"very many years ago"; this season in one day he saw eleven clutches composed of ten fours and one five, and some days later he saw four other sets with four eggs and three sets each with five.

A wet season seems beneficial to the laying Ring-Ouzel. I find that 1925, 1927 and 1932 were good years, and in each case there was a wet April in the Peakland hills. But of course this does not explain why the Ring-Ouzels of one district should maintain a better laying average than the Ring-Ouzels breeding in a similar locality less than 30 miles away, but the fact remains.

JOHN ARMITAGE.

SONG OF SHETLAND WREN.

WHEN in Shetland in 1932 we noticed that the song of the Shetland Wren (*Troglodytes t. zetlandicus*), although easily recognizable as a Wren-song, differed from that of the mainland bird. The song is shorter, with few shakes and trills, sweeter and less shrill. One up and down phrase of a musical quality recurs frequently. Also a rather harsh reeling note, not unlike a note in the Whinchat's song. This seems to be the counterpart of the English bird's trill. M. G. ROBINSON.

[The song of the Outer Hebrides Wren (*T. t. hebridensis*) has been described by Mr. A. B. Duncan (*Scot. Nat.*, 1929, p. 179) as "more of a ripple and less disjointed than that of mainland Wrens". The note of the St. Kilda Wren (*T. t. hirtensis*) has been described as "louder and harsher", "louder, clearer and more prolonged" and "finer and less bubbling" than that of the Common Wren.—EDS.]

LESSER SPOTTED WOODPECKER IN PEMBROKE-SHIRE.

ON May 30th, 1932, I flushed a Lesser Spotted Woodpecker (*Dryobates m. comminutus*) near Llangwm Ferry. It flew off in a westerly direction across the Cleddau towards Llangwm. Messrs. Ingram and Salmon inform me that the only recent record for Pembrokeshire they have note of is that of one seen by Mr. Bertram Lloyd near Haverfordwest on July 10th, 1930.

R. M. LOCKLEY.

EVIDENCE FOR DOUBLE-BROOD IN STONE-CURLEW.

ON August 22nd, 1932, I saw a Stone-Curlew (*Burhinus æ. œdicnemus*) incubating two eggs on an area of waste land

in east Suffolk. These eggs hatched on September 4th. I was informed by a thoroughly competent and trustworthy observer that on this same, well-defined and not extensive, piece of ground, there were towards the end of June a couple of young Stone-Curlews, approaching the flying stage, with their parents. I do not believe two pairs would adopt, even in succession, the same territory; the circumstances seem to me to suggest strongly a second brood, which would be contrary to what most authorities say about this bird. T. G. POWELL.

On September 13th, 1932, when walking over open heath land in east Suffolk, my companion, a keeper, took me to the site of a Stone-Curlew's nest where two or three days previously there were two eggs. The eggs, however, were now not there, but after careful hunting we soon found, a few yards away, the two young chicks crouching down and just about one or two days old. G. BIRD.

[In the *Practical Handbook*, p. 497, I described the Stone-Curlew as single brooded. At that time the only reason for suspecting that a second brood was occasionally reared was the finding of eggs or young late in the season, which might well have been due to the loss of previous layings. Since then Mr. J. Walpole Bond has expressed his belief that this species is sometimes double-brooded, and Major C. Smeed (*antea*, Vol. XVII., p. 65) gives strong, but not quite conclusive, evidence that one pair bred twice in 1923. In this case there was a possibility that the chicks of the first brood had come to grief so that Mr. Powell's evidence is of much interest. Mr. Bird's record of recently hatched young on September 13th is later than any date of which I have any note, and strengthens the evidence for double broodedness.—F.C.R.J.]

SIZE OF CLUTCHES OF COMMON TERN.

WITH reference to the note (*antea*, Vol. XXV., p. 104) on clutches of eggs of the Common Tern (*Sterna hirundo*), it may be of interest to state the conditions which occurred in a north Lancashire colony this year. Out of a total of 367 clutches counted there was only one with four eggs, 210 had three eggs each and 156 had two or one eggs. The eggs were deposited this year rather earlier than usual and there were a number of full clutches on May 29th. E. U. SAVAGE.

SISKIN BREEDING IN SHROPSHIRE.—Mr. H. E. Forrest informs us that a reliable correspondent of his has given him details of the breeding of two pairs of Siskins (*Carduelis spinus*) in Shropshire in 1932, and of at least one pair in 1931,

when one of a brood was caught in August. The nest was in a damson tree in an orchard.

ICELAND REDWING IN DONEGAL.—Mr. G. R. Humphreys has recorded the occurrence of two Iceland Redwings (*Turdus m. coburni*) at lighthouses in Galway and Mayo (Vol. XXV., p. 223). I can now add a third. Mr. C. B. Moffat kindly sent me a cutting from the *People's Press* in which it was recorded that Mr. B. Smyth had found in a field at St. Johnston, co. Donegal, on April 9th, 1932, a "thrush" bearing a ring marked Skovgaard, 26553 Eur. Mr. Skovgaard kindly informs me that this ring was put on a nestling Redwing at Hof, south-east Iceland, on June 20th, 1930.—H.F.W.

HOOPOE IN LANCASHIRE.—Mr. E. Hardy informs us that on September 3rd, 1932, a Hoopoe (*Upupa epops*) visited Allerton Tower Gardens, a Liverpool Corporation park on the southern border of the city, adjacent to Woolton, and spent the afternoon on the lawn where it also attracted the interest of the gardener and local bird-watchers, its black and white barring drawing the attention of passers-by. It was apparently feeding on earthworms or insects. Mr. Hardy recorded the occurrence of a Hoopoe at Birkenhead on June 11th (*antea*, p. 98).

GREEN WOODPECKER IN INVERNESS-SHIRE.—Mrs. F. E. Skelton states (*Scot. Nat.*, 1932, p. 72) that "last year" (no date given) she saw on two occasions a Green Woodpecker (*Picus viridis*) between Foyers and Inverness.

OSPREY IN YORKSHIRE.—Sir A. E. Pease informs us that on September 24th, 1932, he had a splendid view of an Osprey (*Pandion haliaetus*) flying over Guisbrough Park. After soaring about for some minutes the bird disappeared in the direction of Teesmouth.

GREEN SANDPIPER IN ANGLESEY.—Dr. W. H. Dobie informs us that two Green Sandpipers (*Tringa ochropus*) were put up on September 19th, 1932 (one of them being shot and sent to him), at a pool near Llynnon Hall, about three miles from the east coast, north of Holyhead Island. Previous occurrences in Anglesey were reported in 1921 and 1922 (see *British Birds*, Vol. XVI., pp. 112 and 193).

REVIEWS.

Bird Haunts in Wild Britain. By R. N. Winnall and G. K. Yeates. (Philip Allan). Illustrated. 10s. 6d.

IN this book we have chapters on the Berkshire Downs with the Stone-Curlew as the chief attraction, woodland birds (Tawny Owl and others), marshland (Lapwing, Snipe and Redshank), a Berkshire lake,

a Sussex river, a moor in which Arctic Skuas figure prominently, the cliffs and shores of Caithness, northern lochs with Red-throated and Black-throated Divers, and a study of a Rookery. Thirty-one photographs, representing twenty species, have been reproduced and printed on each side of the paper, making fifteen plates and a frontispiece. These are on the whole quite successful, but not in any way exceptional either in technique or the attitude of the birds, which are at the nest—a much over-photographed position.

The authors are very enthusiastic and keen and they have rather more to say of the birds and less of the trials and troubles incidental to photography than is often to be found in similar books, and many of their observations are interesting, though mostly too brief. The best chapters perhaps are those on the Rook (with an exceptionally good photograph), the Divers, with some interesting notes on the behaviour of a Black-throated and the cries of the Red-throated, and the Arctic Skuas. In a long introduction we have a confession of faith, which is on sensible lines, and although hardly two people think quite alike on such questions as protection, shooting, collecting and photography, we have little to cavil at in the authors' opinions, and their outspoken expression may do something towards the cultivation of a middle course and the lessening of factions and extremes, which are detrimental both to birds and ornithology.

We have noted one or two slips and may mention Scandinavian Meadow-Pipit instead of Rock-Pipit on page 131, and the curious statement on page 105 that diving ducks, unlike surface feeders, are not deprived of flight during their moult.

Close-Ups of Birds. By H. N. Southern. Illustrated. (Hutchinson.) 15s. net.

ABOUT half this book is devoted to the Heron; then follow chapters on a Pembrokeshire island and its Puffins, Razorbills and Guillemots, Texel and Avocets and Black-tailed Godwits, photographing ducks in winter and finally Grassholm and its Gannets.

Turning first to the photographs, which are the *raison d'être* of the book, there are thirty-three of these, mostly enlarged to the full size of the page. Many are very good, but in some, perhaps due to over-enlargement, there is a want of sharpness or a lack of detail. The Guillemot and Razorbill, facing page 144, for instance, are crudely black and white and show none of the correct tones and detail to be seen in a photograph of the same two species reproduced opposite page 133. Most of the Heron photographs, both of young and old, are very good. Those of the Avocet, Black-tailed Godwit and Black Tern flying, though not technically good, are a relief from the stereotyped bird-at-the-nest position. The view from the sea of the Grassholm Gannetry is an impressive picture. Besides the photographs, the book is embellished with humorous head- and tail-pieces in pen and ink by Richard Southern.

So far as observations on birds go the author's remarks about the Herons are the best and deserve attention, because he has watched these birds for considerable periods and not merely just when the bird approached the nest and until the necessary photographs were secured. These observations were made at Buscot and Otmoor. Mr. Southern's statement that the Common Heron is not by nature a tree-breeder can hardly be borne out by the facts. One might infer from his remarks that Herons breed in reed-beds as a rule in Holland, but it was shown in the 1925 census in that country that out of 127 heronries only two

were in reeds. Herons of various species in many parts of the world breed more often in trees than elsewhere.

Besides the chapters on the Heron there are interesting observations on various birds here and there throughout the book, but, as in most works of the kind, too much space is devoted, in our opinion, to incidents of travel and difficulties connected with photography. Many of the incidents are trivial, and surely the doings of the birds are more interesting and can be told in a way which does not detract from a book's popular appeal: or is it considered that readers regard an observation on birds as such strong meat that it can only be swallowed in a liberal mixture of pap?

LETTERS.

NOTES AND BEHAVIOUR OF GREEN SANDPIPERS.

To the Editors of BRITISH BIRDS.

SIRS,—With reference to the previous notes on this subject (*antea*, pp. 41, 139 and 172) I give my 1932 notes on the bird at Brooklands Sewage Farm, Surrey, in the lower Thames valley.

July 14th.—One preening when first seen. Flushed twice, and on both occasions it flew low for not more than 200 yards and settled again. No sound heard.

July 17th.—One flushed at fairly close quarters, about 15 yards. Flew low for about 50 yards and settled again. Silent.

July 19th.—One flushed, flew low (about 6 ft. up) for less than 200 yards and went down silent. Put up again it returned silently to where it had first come from.

August 16th.—Going round the farm I put up several times one which gave the triple call, flew a short distance and went down again. When I got to the last area four got up together and went off, attaining a fair height. They flew overhead again about two minutes later, and there were then six instead of four. Gave the triple call frequently.

August 17th.—Six present. Three were flushed together and flew low about 50 yards, calling "*tlee-tee-tee*". One flew low silently about 150 yards. None appeared to "*tower*", but it was getting dark by the time I had been all round the farm. P. A. D. HOLLON.

ROSEATE TERNS WITH THREE EGGS

To the Editors of BRITISH BIRDS.

SIRS,—I have read Mr. Marples' note in your last issue (*antea*, pp. 168-9). On June 20th, 1929, at the same nesting-site, I came across one of these grass-covered scrapes containing three eggs of the Roseate Tern (*Sterna d. dougallii*). These I concluded were the product of more than one bird, the one scrape having been made use of owing to the highly congested condition existing at the colony, a point which Mr. Marples has not taken into consideration or inadvertently omitted to mention in his note.

Having examined *in situ* a large number of clutches of this species since I rediscovered the Roseate Tern breeding in Ireland (Vol. VII., p. 186) I would remark that genuine clutches of two eggs usually include one egg shorter in length than the other, though the characteristic shape is retained. In the clutch of three eggs referred to by me two conformed to this description as regards size and shape, but the third was exceptionally elongated, having a flattened appearance with width below the average. The markings were typical of the eggs of this species, yet there was no uniformity of colouring between any of the three eggs. G. R. HUMPHREYS.

LE GERFAUT

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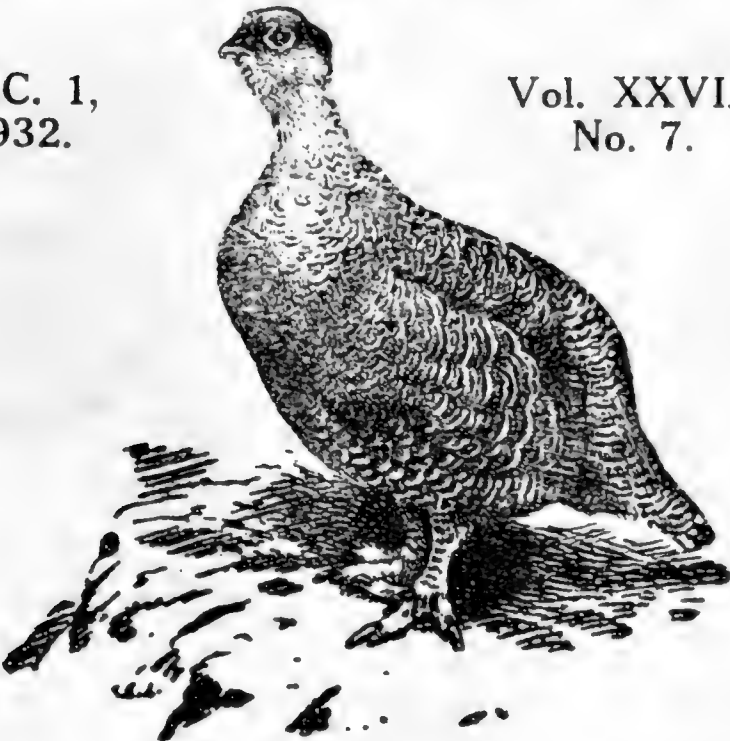
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SNOW-BUNTINGS INLAND IN LANCASHIRE IN WINTER.

BY

JOHN ARMITAGE.

At an altitude between 1,200 and 1,300 ft. on the moors of S.E. Lancashire, Mr. Fred Taylor and I have persistently observed Snow-Buntings (*Plectrophenax nivalis*) during winter; no other passerines have been seen, and, save for an abundant insect food-supply, no small birds would be tempted to stay on these exposed heights during the coldest months of the year. On February 7th, 1932, we flushed a party of about 30 Snow-Buntings from a bank on the Pennines where a flock of between 35 and 40 was disturbed on January 4th, 1931. We saw that the bank was littered with tufts of the moor-grass (*Molinia cærulea*) whose haulms—infested with gall-midge larvæ (*Cecidomyidæ*)—had been eaten along with the vegetable matter, the birds having left only the outer husks. That Snow-Buntings and other birds regard the galled *Molinia* as a source of attraction and sustenance in winter is certain, and we have found that in six different localities frequented by Snow-Buntings the uprooted grass was evident. Samples of the *Molinia* (in which as many as 15 larvæ were found in a single haulm) were sent to Mr. H. Britten, and although he reared and examined closely many hundreds of the adult gall-midges from three counties, one species only (*Oligotrophus ventricolus*) turned up.

Mr. H. Horsfall first found this insect in 1910, when he noticed Reed-Buntings tearing up the *Molinia* on Boardman Edge, S.E. Lancs. (900 ft.), and on March 15th, 1932, Mr. Britten watched Reed-Buntings and Sky-Larks feeding in like manner on Chat Moss, near Manchester (50-100 ft.). Others have noted Starlings and Chaffinches feeding on the larvæ, and from evidence of excreta and presence of the birds, Mr. F. Taylor and I have suspected Rooks, Magpies and Fieldfares.

Our periodical searching for Snow-Buntings on the Pennines in winter was the outcome of chance records of the birds by Mr. I. Whittaker, and by finding their restricted range (usually between 1,200 and 1,300 ft.) made attractive by the infested *Molinia*, we expect our task next season will be simplified. During severe weather, and particularly when the ground is frostbound, we think the birds leave the moors and fly to the coast; it is barely 30 miles between Rawtenstall and Southport. On February 14th, 1932, we searched high and low for several hours without locating a single bird of any kind, and on examining the tufts of *Molinia*, we found them frozen hard

and impossible to tear out by hand. On the following day, however, in another locality, a thaw had set in and some Snow-Buntings were seen.

In the records given below, it will be seen that odd birds are sometimes found. These are Buntings which have become detached from the roving flocks, and they show a desire to join their companions by flying up at intervals and twittering in a different manner than when moving from one feeding place to another, or when disturbed. We wish to stress the *dark* appearance of these birds when viewed among the dry grasses of the pastures. In S.E. Lancs. we met farmers and others who know them as regular winter visitors and refer to them as "Snowbirds", presumably from the season when they appear and not from their colour. They are anything but "Snowflakes", and in February and March the birds become soiled and their white feathers are veiled over with grime from the burnt heather and peat.

Many fruitless trips were made to the moors when we wished to confirm the idea that the frozen ground would be deserted, and on favourable days—knowing that the birds are silent when feeding and easily overlooked—the moors were crossed and recrossed in the hope of flushing birds of some kind. The following observers have supplied me with their records or assisted in the search until it was assumed that the Snow-Buntings had left for the north: Messrs. F. Brindley, H. Dearnaley, E. F. Edwards, F. Taylor, I. Whittaker and Dr. W. Shipton.

Number.	Locality	Elevation in ft.	Date	Observers
35-40	Cowpe Lowe, S.E. Lancs. ..	1,300*	4.1.31	F.T. & J.A.
ca. 60	Rooley Moor, S.E. Lancs. ..	1,300*	4.1.31	F.T. & J.A.
3	Raven's Low, N. Derbys. ..	1,400*	9.1.31	J.A.
7	Blossoms Meadow, N.E. Ches.	1,350	9.1.31	J.A.
1	Blossoms Meadow, N.E. Ches.	1,350	12.1.31	W.S.
7	Rooley Moor, S.E. Lancs. ..	1,300*	18.1.31	F.T. & J.A.
ca. 60	Rooley Moor, S.E. Lancs. ..	1,300*	18.1.31	F.T. & J.A.
14	Nr. Buxton, N. Derbys. ..	1,450	15.2.31	J.A.
1	Nr. Axe Edge, N. Derbys...	1,200	25.2.31	W.S.
1	Rawtenstall Moor, S.E. Lancs.	1,300*	17.1.32	F.T. & J.A.
1	Edenfield Moor, S.E. Lancs.	1,200*	17.1.32	F.T. & J.A.
5	Edenfield Moor, S.E. Lancs.	1,200*	17.1.32	F.T. & J.A.
1	Nr. Moorcock Inn, S.E. Lancs.	1,320*	7.2.32	F.T. & J.A.
ca. 30	Cowpe Lowe, S.E. Lancs. ..	1,300*	7.2.32	F.T. & J.A.
1	Highmoor, W. Yorks. border	1,150*	8.2.32	J.A.
7	Axe Edge, N. Derbys. ..	1,700	15.2.32	H.D. & J.A.
18	The Frith, Buxton, N. Derbys	1,250	16.2.32	E.F.E. & J.A.
4	Oliver Hill, N. Staffs. ..	1,600	16.2.32	E.F.E. & J.A.
1	The Frith, Buxton, N. Derbys.	1,250	10.3.32	E.F.E. & J.A.
12	Colshaw, N. Staffs. ..	1,250*	10.3.32	E.F.E. & J.A.

*Gall-infested *Molinia* grows here.

RECOVERY OF MARKED BIRDS.

NOTE.—Birds re-trapped and released again are omitted here and will be published in a separate list.

No.	Place and Date Ringed.	Place and Date Recovered.
ROOK (<i>Corvus f. frugilegus</i>).		
AB.751	Near Gt. Budworth (Ches.), 15.2.29, ad., by A. W. Boyd.	Where ringed, 5.3.29, by ringer; Gatley (Ches.), 18.4.32, by M. S. Wood.
RS.766	Trapped Chipping Norton (Oxon.), released Cam- bridge, —.8.31, ad., by T. H. Harrisson.	Soham (Cams.), 27.4.32, by the Vicar.
JACKDAW (<i>Colæus m. spermologus</i>).		
RS.3421	Caldwell (Ayr.), 25.5.30, young, by T. Kerr.	Near Largs (Ayr.), 15.4.32, by D. Gillespie.
25744	Penrith (Cumb.), —.6.28, young, for H. J. Moon.	Penruddock (Cumb.), 3.4.32, by S. M. Crosthwaite.
RS.4393	Malvern (Worcs.), 6.7.31, ad., by A. Morrison.	Where ringed, 14.6.32, by P. E. A. Morshead.
RR.3673	Near Canterbury (Kent), 30.5.31, young, for St. Edmund's School N.H.S.	Where ringed, 15.5.32, by ringer.
MAGPIE (<i>Pica p. pica</i>).		
75027	Near Dalston (Cumb.), 15.6.24, young, by R. H. Brown.	Where ringed, —.4.30, by ringer.
RR.5046	Peel (I. of Man) 18.5.29, young, by R. Howarth.	Cronk-y-Voddy (I. of Man), 26.4.32, by E. Goldie.
Z.6028	Nailsea (Som.), 16.8.26, young, by D. Macdonald.	Near where ringed, —.3.32, by T. R. Davey.
STARLING (<i>Sturnus v. vulgaris</i>).		
U.6050	Scone Estate (Perth), 28.1.30, ad., by Lord Scone.	Perth, —.8.32, by E. P. Magruder.
T.7422	Ditto 6.11.30.	Dunblane (Perths.), 26.4.32, by W. C. Dickson.
GF.890	Near Dundee, 22.5.32, young, by E. C. Sharp.	Tayvallich (Argyll.), 12.7.32, by J. Mackenzie.
GF.907	Ditto 22.5.32.	Near Nairn, 24.7.32, by J. McIntosh.
AN.6840	Kilbarchan (Renfrew), 26.1.32, ad., by F. J. Ramsay.	Where ringed, —.8.32, by R. A. Gray.
V.9470	Carlisle (Cumb.), 10.1.30, ad., by J. N. D. Smith.	Near where ringed, 7.5.32, by H. Patrickson.
V.9507	Ditto 11.2.30.	Cannock (Staffs.), —.3.32, by G. H. Edwards.
AN.4342	York, 6.11.31, ad., for Boot- ham School.	Where ringed, 19.6.32, by J. McConway.
P.3370	Wilmslow (Ches.), 24.1.31, ad., by E. Cohen.	Near Macclesfield (Ches.), 26.4.32, by C. D. Smart.
T.4239	Near Gt. Budworth (Ches.), 12.2.29, ad., by A. W. Boyd.	Where ringed, 7.5.32, by ringer (in Tawny Owl's nest).
T.4429	Ditto young, 21.5.29.	Ditto, 17.11.29, 7.6.32 (in Little Owl's nest).

No.	Place and Date Ringed.	Place and Date Recovered.
STARLING (<i>continued</i>).		
R.1294	Near Gt. Budworth, (Ches.), 20.5.31, young, by A. W. Boyd.	Near where ringed, —.6.32, by ringer.
S.4721	Ditto 22.5.30.	Ditto 25.3.32.
R.1366	Ditto ad., 31.12.31.	Near Warrington (Lancs.), —.3.32, by J. H. Clarke.
P.1298	Ditto 30.3.32.	Near Vejen, Jylland, Den- mark, 25.5.32, by O. Lynggaard.
R.1395	Ditto 19.12.31.	Near Dune, Gotland, Sweden. —.10.32, by G. Eriksson.
V.4189	Cheadle (Staffs.), 29.5.30, young, by the late J. R. B. Masefield.	Near Stoke-on-Trent (Staffs.), 21.4.32, by H. F. Cook.
S.2351	Malvern (Worcs.), 6.12.29, ad., by P. E. A. Morshead.	Where ringed, 1.12.31, by ringer.
R.8809	Ditto 5.2.31.	Near Evanger, Hordaland, Norway, Summer, 1932, by J. Lid.
V.8772	Meols (Ches.), 27.12.27, ad., for Oxford Orn. Soc.	Near Middlewich (Ches.), 13.3.32, by F. Greenwood.
P.6681	Oxford, 28.11.31, ad., for Oxford Orn. Soc.	Near where ringed, 14.4.32, by ringer.
AN.7622	Ditto 23.2.32.	Ditto, 7.10.32, by W. Winder.
P.6703	Ditto 4.12.31.	Near Abingdon (Berks.), 10.3.32, by J. H. Taylor.
P.2617	Ditto 26.11.30.	Cammin, Pomerania, Ger- many, 11.7.32, by F. Vossberg.
P.2603	Ditto 25.11.30.	Near Bartenstein, East Prus- sia, 7.5.32, by P. Grodde.
T.6993	Plumstead (Norfolk), 29.5.31, young, by J. M. Ferrier.	Where ringed, 23.1.32, by ringer.
P.5712	Bluntisham (Hunts.), 3.3.31, ad., by Rev. E. Peake.	Ditto 15.3.32.
E.2072	Laindon (Essex), 16.8.31, young, for Lond. N.H.S.	Dagenham (Essex), 6.3.32, by B. Perry.
AN.6747	Rye (Sussex), 27.10.31, ad., by R. G. Williams.	Where ringed, 17.10.32, by R. T. Ashenden.
W.6047	Near Chichester (Sussex), 24.2.27, ad., by R. Carlyon- Britton.	Ditto, 5.6.32, by ringer.
AN.4929	Sway (Hants.), 19.12.31, ad., by G. Marples.	Brockenhurst (Hants.), 1.11.32, by A. V. Saint.
P.1020	Portishead (Som.), 28.2.32, ad., by E. O. Lester.	Near Malmö, Sweden, 6.7.32, by E. Bengtsson.
P.1001	Ditto 24.2.32.	Where ringed, 8.6.32, by J. Biddle.
P.6896	Seaton (Devon), 19.5.31, young, for W. D. Shaw.	Where ringed, 12.3.32, by ringer.
P.7044	Ditto ad., 8.1.32.	Ditto, 15.10.32, by A. R. Wyatt.
AN.3236	Ditto 12.2.32.	Brixham (Devon), 21.3.32, by R. B. Scammell.
AN.4636	Dunmurry (Antrim), 30.12.31, ad., by D. K. Bryson.	Where ringed, 26.5.32, by A. McComb.

No.	Place and Date Ringed.	Place and Date Recovered.
GREENFINCH (<i>Chloris ch. chloris</i>).		
D.6942	Near Dundee, 16.5.26, young, by E. C. Sharp.	Near where ringed, 20.7.32, by D. Graham.
J.9394	Penrith (Cumb.), —.6.30, young, by H. J. Moon.	Near Calthwaite (Cumb.), 3.6.32, by T. H. Hamilton.
L.4974	Deganwy (Carnarvon), 19.6.31, young, by H. Lindeman.	Colwyn Bay (Denbigh), 1.6.32, by A. Gray.
L.1266 (H.6739)	Oxford, 27.1.32, ad., for Ox- ford Orn. Soc.	Where ringed, Feb., 1932 (5), by ringer; near where ringed, 28.5.32, by W. J. Parkes.
G.5172	Branscombe (Devon), 30.12.28, ad., by P. E. A. Morshead.	Sidmouth (Devon), 22.6.32, by Mr. Dell.
LINNET (<i>Carduelis c. cannabina</i>).		
F.5751	Near Perth, 30.5.29, young, for Perth N.H.S.	Forgandenny (Perths.), 10.5.32, by J. Balmain.
BULLFINCH (<i>Pyrrhula p. nesa</i>).		
G.7597	Burnham (Bucks.), 31.5.28, young, by A. Mayall.	Taplow (Bucks.), 18.5.32, by G. H. Emmett.
CHAFFINCH (<i>Fringilla c. cælebs</i>).		
K.4289	Glenorchard (Stirling), 2.7.30, ad., by J. Barth- olomew	Where ringed, 13.5.31, by ringer.
N.4241	Glantou (Northumb.), 30.3.32, ad., by N. Rollin.	Wooler (Northumb.), 19.6.32, by G. Burn.
TZ.647	Ullswater (Westmor.), 31.1.31, ad., by H. J. Moon.	Where ringed, 13.3.31, 24.1.32, by ringer.
TZ.663	Ditto 31.1.31.	Ditto 8.12.31; 15.3.32.
F.7511	Glen Maye (I. of Man), 6.5.29, ad., by F. A. Craine.	Ditto 10.4.31.
B.9158	Near Gt. Budworth (Ches.), 8.3.25, ad., by A. W. Boyd.	Ditto 9.6.31.
F.1192	Rostherne (Ches.), 30.5.27, young, by A. W. Boyd.	Bermondsey, London, 10.4.32, by C. Bustin.
L.8721	Burnham (Bucks.), 1.6.31, young, by A. Mayall.	Where ringed, 7.3.32, by H. W. James.
H.6223	Woodford Green (Essex), 2.2.30, ad., for Lond. N.H.S.	Ditto, 1.8.32, by F. N. Fish.
J.7058	Battle (Sussex), 23.7.31, juv., by H. Whistler.	Ditto, 28.7.31, by ringer; 9.4.32, by T. A. Bedwell.
H.7771	Near Bradninch (Devon), 19.4.30, ad., by J. M. Hepburn.	Ditto, 4.7.32, by E. O. Thomas.
L.4104	Belfast (Antrim), 1.4.31, ad., by J. Cunningham.	Ditto, 31.8.31, by ringer.

No.	Place and Date Ringed.	Place and Date Recovered.
TREE-SPARROW (<i>Passer m. montanus</i>).		
J.5926	Near Gt. Budworth (Ches.), 1.7.30, ad., by A. W. Boyd.	Where ringed, 31.12.31, by ringer.
L.5693.	Ditto young, 11.7.31.	Ditto 31.12.31.
TREE-PIBIT (<i>Anthus t. trivialis</i>).		
TZ.909	Ingleton (Yorks.), —.6.31, young, by H. J. Moon.	Near Bordeaux (Gironde), France, 18.9.32, per <i>The Times</i> .
YELLOW WAGTAIL (<i>Motacilla f. rayi</i>).		
NE.775	Clapham (Yorks.), —.6.32, young, by H. J. Moon.	Vielle-en-Marensin (Landes), France, 31.8.32, by G. Douet.
PIED WAGTAIL (<i>Motacilla a. yarrellii</i>).		
R.3174	Comrie (Perths.), —.6.30, young, for Lord Scone.	Near Barnsley (Yorks.), —.10.31, per <i>The Game-keeper</i> .
SPOTTED FLYCATCHER (<i>Muscicapa s. striata</i>).		
E.1652	Penybont (Radnor), 9.7.26, young, by P. E. A. Morshead.	Near Llandrindod Wells (Radnor), 5.6.32, by G. Millward.
SONG-THRUSH (<i>Turdus ph. clarkei</i>).		
GF.952	Near Dundee, 31.5.32, young, by E. C. Sharp.	Near Ballinasloe (Galway), 20.10.32, by P. M. Gateley.
JF.700	Kirkmahoe (Dumfries), 4.6.32, young, by W. Duncan.	Auldgrith (Dumfries), 9.6.32, by R. McRoberts (in Sparrow-Hawk's nest).
P.8364	Ullswater (Cumb.), —.6.31, young, by H. J. Moon.	Watermillock (Cumb.), —.5.32, per ringer.
AN.5680	Ingleton (Yorks.), —.7.31, young, by H. J. Moon.	Where ringed, 17.7.32, per ringer.
W.5501	Near Gt. Budworth (Ches.), 7.5.28, young, by A. W. Boyd.	Ditto 29.5.32.
S.4796	Ditto 1.6.30.	Ditto 18.4.32.
P.2704	Oxford, 28.10.31, ad., for Oxford Orn. Soc.	Near where ringed, 13.4.32, by G. Musgrave.
HF.57	Weybourne (Norfolk), 11.5.32, young, by R. M. Garnett.	Norwich, 29.8.32, by G. A. Brasnett.
P.6420	Kelling (Norfolk), 18.4.32, young, by R. M. Garnett.	Near Turnhout (Antwerp), Belgium, 25.9.32, by V. van Straelen.
P.6991	Cambridge, 30.4.31, young, by A. E. Cohen.	Where ringed, 12.2.32, by Mrs. Brindley.
S.1402	Near Ware (Herts.), 18.5.30, young, by J. D'cath.	Near where ringed, —.5.32, by Miss Prior.
P.7856	Near Sutton (Surrey), 10.5.31, young, by T. J. Wallace.	Cheam (Surrey), 15.5.32, by J. W. Clarke.
T.6265	Near Chichester (Sussex), 17.1.29, ad., by W. D. Shaw.	Horsham (Sussex), 7.5.32, by Major Lyell.
AN.3204	Seaton (Devon), 22.2.32, ad., for W. D. Shaw.	Near Honiton (Devon), 20.5.32, by R. Comben.

No.	Place and Date Ringed.	Place and Date Recovered.
BLACKBIRD (<i>Turdus m. merula</i>).		
T.7487	Near Perth, 17.6.30, young, for Lord Scone.	Near where ringed, 1.2.32, by Miss Andrews.
H.6392	Scone Estate, Perth, 8.2.30, ad., by Lord Scone.	I. of Föhr, Schleswig-Holstein, Germany, 26.9.31, by Dr. R. Drost.
AN.403	Near Perth, 18.6.31, young, for Perth N.H.S.	Kinfauns (Perths.), 15.3.32, by N. Dick.
P.3486	Broughty Ferry (Angus), 8.2.31, ad., by T. L. Smith.	Where ringed, 23.4.32, per <i>Dundee Evening Telegraph</i> .
W.9815	Rhu (Dumbarton), 12.5.28, young, by T. Kerr.	Helensburgh (Dumbarton), 9.3.32, by A. Hosie.
P.7946	Holy I. (Northumb.), 18.9.31, ad., for Oxford Orn. Soc.	Where ringed, 10.4.32, by J. Strickland.
U.2329	Norton (Durham), 11.1.30, ad., for Lt.-Col. G. P. Pollitt.	Near where ringed, 24.8.32, by C. E. Diddams.
U.9500	Swineside (Cumb.), 30.7.28, ad., by L. W. Streatfeild.	Where ringed, 8.3.32, by ringer.
S.5642	Penrith (Cumb.), —.6.29, young, by H. J. Moon.	Near where ringed, 4.9.31, by ringer.
J.4685	Ditto —.5.30.	Ditto 5.9.31.
P.5263	Ditto ad., —.5.31.	Ditto 9.6.32.
J.4456	Ditto young, —.5.30.	Stainton (Cumb.), 25.7.32, by F. M. Dent.
RS.4823	Kirkby Lonsdale (Westmor.), —.6.31, young, by H. J. Moon.	Near where ringed, 10.6.32, by F. R. Horton.
AN.4145	Wilmslow (Ches.), 22.6.31, juv., by E. Cohen.	Where ringed, 25.6.31, by ringer; near where ringed, —.3.32, by H. Kinsey.
S.4380	Near Gt. Budworth (Ches.), 29.8.29, juv., by A. W. Boyd.	Near where ringed, early 1932, by ringer.
R.1180	Ditto ad., 7.3.31.	Where ringed, 2.3.32; near where ringed, 23.4.32, by ringer (in Tawny Owl's nest).
E.3098	Cheadle (Staffs.), 22.2.28, ad., by the late J. R. B. Masefield.	Where ringed, 6.6.32, by Mrs. Masefield.
95241	Oundle (Northants.), 9.1.29, ad., by J. McC. Fisher.	Where ringed, 22.1.29, by ringer; near where ringed, 29.6.32, by A. Brackley.
P.8522	Rugby (Warwicks.), 15.6.31, young, for Rugby School.	Near where ringed, 17.6.32, by Mrs. Addison.
P.3256	Malvern (Worcs.), 16.6.31, juv., by P. E. A. Morshead.	Where ringed, 13.6.32, by Mrs. Sears.
S.8761	Ditto young, 19.5.30.	Near Malvern Link (Worcs.), 18.9.32, by E. Beale.
AN.7661	Blenheim (Oxon.), 25.2.32, ad., for Oxford Orn. Soc.	Woodstock (Oxon.), 24.10.32, by R. Launchbury.

No.	Place and Date Ringed.	Place and Date Recovered.
BLACKBIRD (<i>continued</i>).		
P.9393	Eton (Bucks.), 13.6.31, young, by M. L. Pilkington.	Where ringed, 24.6.32, by Miss Barry.
93080	Near East Dereham (Norfolk), 22.4.29, ad., for J. McC. Fisher.	Where ringed, 30.12.31, by ringer.
AN.661	Bealings (Suffolk), 27.5.31, young, by A. Mayall.	Where ringed, —.12.31, by ringer.
T.8710	Hartest (Suffolk), 16.8.29, ad., for Clifton Coll. Sci. Soc.	Where ringed, 5.6.32, by W. Woodbridge.
AN.3408	Debden Green (Essex), 26.5.32, young, for Lond. N.H.S.	Bushey (Herts.), 23.7.32, by C. P. Bliss.
T.6974	Woodford Green (Essex), 6.7.29, ad., for Lond. N.H.S.	Where ringed, 7.6.32, by Mrs. Fish.
T.6894	Addlestone (Surrey), 29.4.29, young, for Lond. N.H.S.	Where ringed, 26.6.32, by E. Fevez.
M.4976	Battle (Sussex), 12.2.32, ad., by H. Whistler.	Where ringed, 12.7.32, by ringer.
R.4309	Near Hastings (Sussex), 26.4.31, young, by B. T. Brooker.	Ménéac (Morbihan), France, Winter, 1931-2, per <i>Chasseur Français</i> .
P.8033	Rye (Sussex), 24.4.31, young, by R. G. Williams.	Near where ringed, —.5.32, by J. Willis (killed by Sparrow-Hawk).
W.6107	Near Chichester (Sussex), 6.1.29, ad., by R. Carlyon-Britton.	Where ringed, 2.7.32, by ringer.
W.6112	Ditto 15.2.29.	Ditto 2.7.32.
T.7095	Shanklin (I.O.W.), 29.5.31, young, by J. F. Wynne.	Ditto, 13.4.32, by J. H. Smith.
P.3056	Ditto ad., 11.3.31.	Ditto, 15.6.32, by Mrs. Newnham.
R.3764	St. Austell (Cornwall), 5.1.31, ad., by J. Smallwood.	Ditto, —.3.32, by ringer.
REDBREAST (<i>Erithacus v. melophilus</i>).		
TZ.607	Ullswater (Westmor.), 20.1.31, ad., by H. J. Moon.	Where ringed, 28.12.31; 29.1.32, by ringer.
L.1634	Arnside (Westmor.), 12.1.32, ad., by J. A. G. Barnes.	Where ringed, 22.5.32, by Miss Stuart.
K.8948	Near Gt. Budworth (Ches.), 1.5.31, young, by A. W. Boyd.	Near Warrington (Lancs.), 10.6.32, per E. Lincoln.
L.8405	Malvern (Worcs.), 1.8.31, ad., by P. E. A. Morshead.	Where ringed, 17.12.31; 21.1.32; 2.3.32, by ringer.
L.1319	Oxford, 29.1.31, ad., for Oxford Orn. Soc.	Near where ringed, 1.9.31, by ringer.

No.	Place and Date Ringed.	Place and Date Recovered.
REDBREAST (<i>continued</i>).		
L.1827	Oxford, 1.2.31, ad., for Oxford Orn. Soc.	Where ringed, 10.2.31; Mar., 1931 (4); 16.11.31; near where ringed, 31.12.31, by ringer.
J.5254	Bluntisham (Hunts.), 13.11.30, ad., by Rev. E. Peake.	Where ringed, 24.2.31; 17.11.31, by ringer.
L.5282	Ditto juv., 16.7.31.	Ditto 4.8.31; 4.12.31.
K.2807	Bealings (Suffolk), 5.3.31, ad., by A. Mayall.	Ditto 25.9.31.
K.7936	Hayward's Heath (Sussex), 12.9.30, ad., by A. Mor- rison.	Ditto, 25.12.30; 5.8.31; 31.12.31; 1.4.32, by ringer; —6.32, by Mrs. R. Clarke.
M.4340	Ditto 13.8.31.	Ditto, 5.4.32, by A. Vickers.
L.1442	Shanklin (I.O.W.), 3.2.31, ad., by J. F. Wynne.	Where ringed, 10.2.31; Mar., 1931 (3); 28.4.31; Jan., 1932 (8); Feb., 1932 (6); Mar., 1932 (3); —5.32, by ringer.
J.5554	Chudleigh (Devon), 26.12.30, ad., by J. M. Hepburn.	Where ringed, 23.12.31, by ringer; —1.32, by E. Roberts.
H.4443	Near Plymouth (Devon), 30.12.28, ad., by P. E. A. Morshead.	Where ringed, 27.2.32, by ringer.
G.7480	Belfast (Antrim), 8.3.31, ad., by J. Cunningham.	Where ringed, 23.10.31, by ringer.
HEDGE-SPARROW (<i>Prunella m. occidentalis</i>).		
L.4746	Dornoch (Suth.), 29.6.31, ad., by A. E. Cohen.	Where ringed, Winter, 1931-32, by ringer.
N.1267	Upper Largo (Fife), 15.9.31, ad., by A. H. Eggeling.	Ditto 18.4.32.
H.3040	Ullswater (Westmor.), 7.2.30, ad., by H. J. Moon.	Ditto 25.11.31; 17.2.32.
M.1699	Wilmslow (Ches.), 22.7.31, by E. Cohen.	Ditto, 28.6.32, by B. L. Proctor.
K.8815	Near Gt. Budworth (Ches.), 28.2.31, ad., by A. W. Boyd.	Ditto, 19.3.31; 6.9.32, by ringer.
K.5530	Malvern (Worcs.), 20.9.30, ad., by P. E. A. Mors- head.	Ditto 30.5.31; 28.2.32.
SHETLAND WREN (<i>Troglodytes t. zetlandicus</i>).		
NB.463	Mid-Yell, Shetland, 27.6.32, young, for Oxford Orn. Soc.	Unst, Shetland, 27.8.32, by J. W. Jamieson.
SWALLOW (<i>Hirundo r. rustica</i>).		
H.7910	Stockton-on-Tees (Dur- ham), 1.9.31, ad., for Lt.-Col. Pollitt.	Near where ringed, 14.5.32, by J. Nurse.
L.3761	Ingleton (Yorks.), —6.31, young, by H. J. Moon.	Ditto, —5.32, by M. Faraday.

No.	Place and Date Ringed.	Place and Date Recovered.
SWALLOW (<i>continued</i>).		
M.3766	Andreas (I. of Man), 26.7.31, young, by F. A. Craine.	Ballaugh (I. of Man), 5.5.32, by Miss F. Pitt.
TY.509	Near Gt. Budworth (Ches.), 15.7.30, young, by A. W. Boyd.	Near where ringed, 8.5.31, by ringer.
M.1028	Malvern (Worcs.), 13.6.31, young, by A. Morrison.	Kempsey (Worcs.), 28.5.32, by J. Smith.
NC.789	Eton (Bucks.), 17.6.32, young, by M. L. Pilkington.	Near Clermont (Oise), France, —.10.32, by J. Chaife.
SS.409	Holmwood (Surrey), 14.8.27, young, by H. B. P. Kingham.	Perpignan (Pyrenées Orientales), France, —.10.32, by P. Villaros.
MARTIN (<i>Delichon u. urbica</i>).		
K.5867	Wolsingham (Durham), 29.6.30, young, by R. Martinson.	Where ringed, 11.5.32, by ringer.
TT.92	Kelling (Norfolk), 17.7.29, young, by R. M. Garnett.	Salthouse (Norfolk), 16.6.32, by ringer.
M.1856	Ponsbourne (Herts.), 12.7.31, ad., by M. L. Pilkington.	Near Hatfield (Herts.), 15.6.32, by Miss Henderson.
SWIFT (<i>Apus a. apus</i>).		
6206	Theale (Berks.), 24.5.22, ad., by N. H. Joy.	Sevenoaks (Kent), 8.5.32, by C. Manford.
CUCKOO (<i>Cuculus c. canorus</i>).		
S.6016	Bealings (Suffolk), 7.7.32, young, by A. Mayall.	Stonham Aspal (Suffolk), 24.7.32, by Mrs. Abbott.
LITTLE OWL (<i>Athene n. vidalii</i>).		
RT.1434	Tenterden (Kent), 5.6.32, young, for R. W. Stott.	Adisham (Kent), 22.8.32, by F. Newington.
RS.2885	Peasmarsh (Sussex), 26.6.30, young, by R. G. Williams.	Brabourne (Kent), 23.6.32, by J. Hall.
BARN-OWL (<i>Tyto a. alba</i>).		
AG.353	Near Gt. Budworth (Ches.), 4.7.31, young, by A. W. Boyd.	Near where ringed, 15.11.32, by J. Ockleston.
MERLIN (<i>Falco c. aesalon</i>).		
RT.3450	Halkirk (Caithness), 23.6.32, young, by M. E. W. North.	Near Thurso (Caithness), 14.10.32, by D. MacLeod.
RR.3165	Elsdon (Northumb.), 20.6.31, young, by Mrs. T. E. Hodgkin.	Rochester (Northumb.), 6.6.32, by C. Buckwell.
77149	Near Hawes Junction (Yorks.), 2.7.28, young, for R. M. Garnett.	Near Dalry (Kirkcudbr.), —.6.32, by D. Girvan.
RR.4462	East Cheshire, 6.6.29, young, by A. W. Boyd.	Littledale Fells (Lancs.), 26.5.32, by R. Coombes.

No.	Place and Date Ringed.	Place and Date Recovered.
KESTREL (<i>Falco t. tinnunculus</i>).		
RS.1930	Scone Estate (Perth.), 17.7.31, young, by Lord Scone.	Near Carnoustie (Angus), 17.5.32, by W. Duncan.
RR.1918	Near Sebergham (Cumb.), 18.6.29, young, by R. H. Brown.	Near Cockermouth (Cumb.), 18.5.32, by T. Baty.
RR.1915	Same brood as above.	Near Carlisle (Cumb.), 17.5.32, by G. Armstrong.
RT.1268	Otmoor (Oxon), 11.6.32, young, by W. A. Cad- man.	Near Marlborough (Wilts.), 19.8.32, by T. Banbury.
COMMON BUZZARD (<i>Buteo b. buteo</i>).		
108008	Morar (Inverness), 19.6.31, young, by G. Waterston.	Near Portree (Skye), 12.4.32, by D. Nicolson.
MONTAGU'S HARRIER (<i>Circus pygargus</i>).		
RS.2677	Norfolk, 24.6.30, young, by Mrs. S. Wilson.	Waxham (Norfolk), 6.6.32, by J. Vincent (found dead).
COMMON HERON (<i>Ardea c. cinerea</i>).		
105929	Floriston (Cumb.), 12.5.28, young, by R. H. Brown.	Southwaite (Cumb.), 5.5.32, by Lt.-Col. James.
106570	Ditto 9.5.29.	Kintyre (Argyll), 16.5.32, by E. McG. Ralston.
107393	Near Wellington (Salop), 1.5.30, young, by W. A. Cadman.	Near Builth (Brecon), 16.11.30, by A. Evan Thomas.
108421	Near Henley-on-Thames (Bucks.), 8.5.32, young, for Lt.-Col. Pollitt.	Kintbury (Berks.), 10.8.32, by Lord Dunleath.
SHELD-DUCK (<i>Tadorna tadorna</i>).		
AL.101	Goswick (Northumb.), 29.6.30, young, by Mrs. T. E. Hodgkin.	Where ringed, 21.5.32, by G. Hope.
MALLARD (<i>Anas p. platyrhyncha</i>).		
AD.857	Almondbank (Perths.), 9.7.31, juv., by Lord Scone.	Bridge of Earn (Perths.), 30.1.32, by A. McKenzie.
AL.459	Leswalt (Wigtown), 14.3.31, ad., for M. Portal.	Near where ringed, 1.11.32, by J. Law.
AF.155	Hickling (Norfolk), 8.3.30, ad., for A. W. Boyd.	Kittilä, North Finland, 6.9.31, by Dr. I. Välikangas.
AF.144	Ditto 8.3.30.	Aasen, Trondheim, Norway, Spring, 1932, by N. Klinge.
TEAL (<i>Anas c. crecca</i>).		
RS.1628	Loch Leven (Kinross), 20.6.31, young, by Lord Scone.	Overtornea (Norrlund), Swed- en, 3.6.32, by J. Mettävainia.
RS.4603	Leswalt (Wigtown), 7.3.32, ad., by M. Portal.	Grudziadz, Poland, 15.7.32, by M. Zilleurd.
69604	Ditto 18.3.30.	Karlskoga (Örebro), Sweden, 22.4.32, by Dr. E. Lönnberg.

No.	Place and Date Ringed.	Place and Date Recovered.
TEAL (<i>continued</i>)		
Netherby 10	Netherby Estate (Cumb.), —9.30, ad., by the late Sir R. Graham.	I. of Föhr, Schleswig-Holstein, —12.31, by P. Skovgaard.
Netherby 110	Longtown (Cumb.), 2.4.32, ad., by the late Sir R. Graham.	Briel, Zuid Holland, 20.8.32, by Prof. E. D. Van Oort.
CORMORANT (<i>Phalacrocorax c. carbo</i>).		
109441	Badcall Is. (Suth.), 30.6.32, young, by E. C. Sharp.	Stornoway (Outer Heb.), 7.10.32, by T. Allan.
109446	Ditto 27.6.32.	St. Guénole (Finistère), France, 30.9.32, by Miss Henn.
102029	Mochrum (Wigtown), 18.7.31, young, by Lord D. Crichton-Stuart.	Newtowncashel (Longford), 8.4.32, by J. Farrell.
SHAG (<i>Phalacrocorax a. aristotelis</i>).		
104448	Shillay I., Sound of Harris, 1.7.29, young, by E. C. Sharp.	Benbecula (Outer Heb.), 2.3.32, by A. McDonald.
108865	Handa (Suth.), 6.7.31, young, by E. C. Sharp.	South Ronaldshay, Orkney, —8.32, by D. Robertson.
108871	Ditto 6.7.31.	Loch Boisdale, S. Uist (Outer Heb.), 18.3.32, by D. Mac- kay.
108891	Ditto ad., 6.7.31.	Where ringed, 30.6.32, by ringer.
108929	Ditto young, 25.6.32.	I. of Barra (Outer Heb.), 8.10.32, by D. Macleod.
108935	Ditto 25.6.32.	Little Loch Broom (Ross.), 31.8.32, by J. Lawson.
109467	Ditto 28.6.32.	Knoidart (Inverness.), 15.9.32, by J. McInnes.
GANNET (<i>Sula bassana</i>).		
103926	Ailsa Craig, 30.7.24, young, by D. Macdonald.	Near where ringed, 1.4.32, by J. MacCrimble.
MANX SHEARWATER (<i>Puffinus p. puffinus</i>).		
RS.2246 (AE.681)	Skokholm (Pemb.), 9.5.29, ad., by R. M. Lockley.	Where ringed, 29.3.30 ; 4.5.31 ; 21.3.32, by ringer.
RS.2256 (AE.682)	Ditto 15.5.29.	Ditto, 29.3.30 ; 2.5.31 ; 21.3.32.
RS.2259 (AG.701)	Ditto 5.5.30.	Ditto 11.5.31 ; 28.3.32.
RS.2272 (AG.702)	Ditto 5.5.30.	Ditto 13.5.31 ; 29.3.32.
RS.2251	Ditto 6.5.31.	Ditto 28.3.32.
RS.2247	Ditto 14.5.31.	Ditto 28.3.32.
RS.2279	Ditto 24.5.31.	Ditto 28.3.32.
RS.2269	Ditto 4.6.31.	Ditto 29.3.32.
RS.2271	Ditto 24.6.31.	Ditto 21.3.32.

No.	Place and Date Ringed.	Place and Date Recovered.
WOOD-PIGEON (<i>Columba p. palumbus</i>).		
AK.264	Dornoch (Suth.), 9.7.30, young, by E. Cohen.	The Mound (Suth.), 26.8.32, by F. Wignall.
RS.248	Glenorchard (Stirling), 12.5.30, young, by J. Bartholomew.	Near Glasgow, 19.8.32, by W. Stewart.
TURTLE-DOVE (<i>Streptopelia t. turtur</i>).		
RR.4575	Near Gt. Budworth (Ches.), 15.6.32, ad., by A. W. Boyd.	Breuil-Magné (Charente Inf.), France, 29.8.32, by H. Roy.
RR.4520	Ditto 10.8.30.	Chamusca (Estremadura), Portugal, —.10.32, by G. Reynolds and F. Hasse.
RR.4529	Ditto 8.6.31.	Puente-Genil (Cordoba), Spain, 19.4.32, by F. Yeron-Chacon.
79273	Holmwood (Surrey), 6.6.26, ad., by H. B. P. Kingham.	Where ringed, 24.7.27, by ringer; Billingshurst (Sussex), 26.9.32 (found injured), by H. Wadey.
LAPWING (<i>Vanellus vanellus</i>).		
Y.3454	Glenorchard (Stirling), 1.6.25, young, by J. Bartholomew.	Where ringed, —.4.32, by ringer.
W.9940	Ditto 4.6.28.	Cardonald (Renfrew.), 19.4.32, by C. Ingram.
AN.203	Ditto 31.5.31.	Mallow (Cork), 28.2.32, by W. Ware.
S.3685	Kilmacolm (Renfrew), 29.5.30, young, by Mr. and Mrs. R. O. Blyth.	Near where ringed, 21.4.32, by Miss Nicolson.
AN.973	Near Dalmellington (Ayr.), 25.5.31, young, by Mrs. Morley.	Queyrac (Gironde), France, 20.3.32, per <i>Chasseur Français</i> .
AN.2063	Near Uldale (Cumb.), 29.5.31, young, by R. H. Brown.	Near Middleton (Cork), 29.1.32, by G. O'Connell.
S.5142	Near Skelton (Cumb.), 22.6.29, young, by R. H. Brown.	Caldbeck (Cumb.), 5.4.32, by T. Pearson.
RR.3460	Penrith (Cumb.), —.5.30, young, by H. J. Moon.	Newby (Cumb.), 6.6.32, by R. Kitching.
R.8348	Ditto —.6.30.	Shap (Westmor.), 27.4.32, by S. Ellwood.
R.5709	Ullswater (Cumb.), —.5.30, young, by H. J. Moon.	Near where ringed, 29.4.32, by F. Potter.
R.9501	Shap (Westmor.), —.6.30, young, by H. J. Moon.	Newby (Cumb.), 2.7.32, per ringer.
AP.1702	Ditto, 22.5.32, by Mrs. Morley.	Near Birmingham (Warwicks.), 7.8.32, by Police Supt., Chamberlin.
V.7042	Ingleton (Yorks.), —.7.27, young, by H. J. Moon.	Lune Estuary (Lancs.), 9.10.32, by R. Hebblethwaite.

No.	Place and Date Ringed.	Place and Date Recovered.
LAPWING (<i>continued</i>).		
AP.3533	Clapham (Yorks.), —.6.32, young, by H. J. Moon.	Near Rochdale (Lancs.), 27.9.32, by T. Chadwick.
R.5218	Near Wilmslow (Ches.), 16.6.30, young, by Mrs. Morley.	Near Quimper (Finistère), France, 12.2.32, per <i>Chasseur Français</i> .
V.2152	Laugharne (Carms.), 28.4.29, young, by J. F. Thomas.	Where ringed, 29.7.32, by ringer.
P.2822	Kelling (Norfolk), 31.5.31, young, by R. M. Garnett.	Near where ringed, 17.7.32, by ringer.
P.1853	Near Bristol (Glos.), 8.5.31, young, for Clifton Coll. Sci. Soc.	Fouesnant (Finistère), France, 13.2.32, per <i>Chasseur Français</i> .
REDSHANK (<i>Tringa t. totanus</i>).		
AN.4625	Aberlady (Haddington), 24.6.31, young, by D. K. Bryson.	Where ringed, 10.8.32, by J. Gilruth.
JF.237	Plumpton (Cumb.), —.5.32, young, by H. J. Moon.	Paimpol (Côtes-du-Nord), France, 5.8.32, per <i>Chasseur Français</i> .
CURLEW (<i>Numenius a. arquata</i>).		
AM.480	Farr (Inverness.), 28.6.32, young, by E. P. Leach.	Listowel (Kerry), 31.10.32, by J. Crowley.
23571	Menteith (Stirling), 14.6.30, young, by Sir S. Bilsland.	Aghamore (Mayo), 1.11.31, by M. Kenny.
AL.263	Penrith (Cumb.), —.5.32, young, by H. J. Moon.	Lisdoonvarna (Clare), 2.10.32, by M. Manning.
29639	Tebay (Westmor.), —.6.31, young, by H. J. Moon.	Carsphairn (Kirkcudbr.), 16.4.32, by J. Belford.
SNIPE (<i>Capella g. gallinago</i>).		
W.1201	Logiealmond (Perths.), 12.5.27, juv., for Lord Scone.	Near where ringed, 8.8.32, by ringer.
RS.1701	Ditto 4.6.32.	Kirkentilloch (Stirling), 18.8.32, by Commander J. Bethell.
WOODCOCK (<i>Scolopax r. rusticola</i>).		
P.4462	Near Crieff (Perths.), 2.5.31, young, by Lord Scone.	Near Bankfoot (Perths.), 3.9.32 per <i>The Field</i> .
S.9186	Scone Estate (Perths.), 29.5.30, young, by Lord Scone.	Kinfauns (Perths.), 3.11.32, by Rev. R. S. Davidson.
R.3385	Near Thornhill (Dumfries), 9.5.31, young, by Lord Scone.	Keir (Dumfries), 30.1.32, by A. B. Duncan.
AP.972	Near Kirkmichael (Dumfries), 1.5.32, young, for W. and A. B. Duncan.	Courance (Dumfries), 28.9.32, by J. Ferguson.

No. *Place and Date Ringed.* *Place and Date Recovered.*

WOODCOCK (*continued*).

- AP.1806 Wolsingham (Durham), Near where ringed, 28.9.32, by
24.5.32, young, by R. H. Watson.
Martinson.
W.8801 Abbeystead (Lancs.), 1927, Near Garstang (Lancs.),
young, by H. W. Robin- —.11.32, by R. Silcock.
son.

SANDWICH TERN (*Sterna s. sandvicensis*).

- AP.210 Ravenglass (Cumb.), Portrush (Antrim), 26.8.32, by
27.6.32, young, by H. R. Wolsey.
W. Robinson.
P.1582 Scolt Head (Norfolk), Miramar, Oporto, Portugal,
2.7.32, juv., by A. W. 22.9.32, by F. B. Gordon.
Boyd.
S.5092 Ditto 28.6.30. Porto Alexandre, Portuguese
W. Africa, 24.4.32, by A.
Sena.
AN.8571 Salthouse (Norfolk), Gravelines (Nord), France,
14.6.32, young, by R. 19.8.32, by A. Wignolle.
M. Garnett.
S.6977 Ditto 1.7.29. St. Valery-sur-Somme, France,
28.8.32, by J. Delacour.
AN.8793 Ditto 10.6.32. Mouth of R. Orne (Calvados),
France, 10.9.32, by J.
Nadaud.

COMMON TERN (*Sterna h. hirundo*).

- ND.666 Walney I. (Lancs.), 12.6.32, Lagos (Algarve), Portugal,
young, by H. W. Robin- —.9.32, by G. Reynolds.
son.

LESSER BLACK-BACKED GULL (*Larus fuscus graellsii*).

- AA.2446 Rockcliffe Marsh (Cumb.), Near Langport (Som.), 28.6.32,
5.7.31, young, by R. H. by C. Langford.
Brown.
AA.3729 Ditto 17.7.32. Faro (Algarve), Portugal,
14.10.32, by F. de Sousa Uva.
AM782 Ditto 5.7.31. Castilla (Huelva), Spain, 5.8.32,
by J. M. Reales.
26447 Foulshaw (Westmor.), Ciboure (Basses Pyrenées),
7.7.27, young, by H. W. France, 15.4.32, per *Fishing*
Robinson. *Gazette*.
AA.2634 Walney I. (Lancs.), 29.5.32, Near Manchester (Lancs.),
young, by H. W. Rob- 24.10.32, by J. Hayes.
inson.

RAZORBILL (*Alca torda*).

- RS.4006 Handa I. (Suth.), 3.7.30, Værøy, Lofoten Is., Norway,
young, by E. Cohen. —.6.31, by H. T. Schaanning.

LAND-RAIL (*Crex crex*).

- R.3492 Redgorton (Perths.), Gerona, Spain, 1.9.32, by J. D.
25.6.32, young, for Lord Pla.
Scone.

NOTES

ACORN-FEEDING BIRDS.

THIS year being a good acorn year in Breconshire I have been watching the different ways in which this food is partaken of by various birds. The Wood-Pigeon (*Columba palumbus*) feeds from the ground only and swallows the whole acorn, but waits until just before roosting time to fill its crop to the full. Birds shot prior to 1 p.m. had a seemingly empty crop. The Pheasant (*Phasianus colchicus*) feeds also from the ground and although it is picking about all day under the oak trees it only fills to bursting point late in the afternoon. The Rook (*Corvus frugilegus*) feeds all day from the tree only. Its procedure is to pluck off two or three acorns and then fly off with them perhaps as far as a mile or more to an open grass field, when it pecks them with hard blows from its beak till the nut is shelled. It then swallows them and returns to the same tree for more. Each Rook had its own especial shelling field and spot, so the birds could be seen all day long going off to, and coming from, all directions. It is perhaps through being able to shell the acorn that they can digest more readily and therefore feed all day, whilst the inability of the Wood-Pigeon and Pheasant to do this forces them to sleep on their heavy crop.

ALEC T. WILSON.

RARE BIRDS IN ORKNEY.

THE following occurrences of rare visitors to Orkney have come under my notice.

ROSE-COLOURED STARLING (*Pastor roseus*).—One was shot on August 25th, 1932, by F. Eunson, Jr., at Little Millhouse, parish of Holm. This bird is being set up for the Stromness Museum.

BLACKCAP (*Sylvia atricapilla*).—A female was killed in my garden near Kirkwall on October 10th, 1932.

HOOPOE (*Upupa epops*).—One was killed by a cat in the parish of Birsay on September 23rd, 1932. The head was recovered and sent to the Royal Scottish Museum.

WRYNECK (*Jynx torquilla*).—One was found dying on September 1st, 1932, by Mr. Mackenzie at Kirkwall. This bird I saw myself.

RUDDY SHELD-DUCK (*Casarca ferruginea*).—A male was caught on May 14th, 1932, by John Wilson, at Burrian in the Island of Sanday, and is being set up for the Stromness Museum.

DUNCAN J. ROBERTSON.

TAWNY PIPIT IN SUSSEX.

A TAWNY PIPIT (*Anthus c. campestris*) was shot on September 17th, 1932, on the Sussex coast not far from Eastbourne. The bird on dissection proved to be a female. It is in freshly moulted plumage, and has the central part of its cranial vault still membranous as a proof of immaturity. The wing measures 87.5 mm. JAMES M. HARRISON.

NOTES ON THE NESTING OF THE REED-WARBLER.

I WAS surprised to learn in *British Birds* for September, 1932, that second broods of the Reed-Warbler (*Acrocephalus s. scirpaceus*) were not the normal thing, and I find on reference to various text-books that they are regarded as quite unusual. As this is contrary to my experience, perhaps the following notes on their breeding in Cheshire may be of interest.

Nests usually are not built immediately after the birds' arrival. In this district they seem to be invariably associated with the reed (*Arundo phragmites*) which forms the reed-beds bordering the meres and also grows in smaller quantity in a few ditches and marshy places.

As the great majority of nests are actually built among these reeds and over water, and as the new reeds do not attain any height till June, most of the birds delay their nesting; they arrive usually in the last week of April or the first week of May—exceptionally as early as April 17th—but it is unusual to find nests before about May 20th.

Early nests are built in the old reeds, and also in bramble, wild raspberry, rhododendron, sedges and other low plants, usually near but not necessarily over water, but always in proximity to reeds; the earliest nest (almost completed) I have seen was found on May 4th, 1913, and was built in old reeds. (*British Birds*, IX., p. 121.)

Where old and new reeds are selected to support a nest (as occasionally happens) the growth of the new reed makes the nest lop-sided and the young have great difficulty in staying in the nest; doubtless the nest sometimes comes to complete disaster in this way.

Their close association with the reed was shown in 1929, when I found a single nest in a little reed-bed a few yards in extent beside a small mere a couple of miles distant from any other reed-bed or Reed-Warbler colony.

Building continues from the third week of May and throughout June, and sometimes first nests are not begun till early July; young are found fully fledged from mid-June to mid-July; a second batch of nests follows in the last week of July and the first week of August.

During the summers of 1928, 1929 and 1930 I visited two reed-beds regularly to mark the nestlings, paying particular attention to one bed.

1. In the first year nine broods were marked between June 19th and July 11th, and on August 2nd in a short search I found four more nests, each with eggs, in the bed which had held six of the nine broods.

2. In 1929 few were fledged in June, but flew at various dates throughout July, and on July 21st I found six more nests with eggs. In this case these second or late sets of eggs were laid while some of the earlier nests still contained young.

3. In 1930 most of the first broods flew between the third week of June and mid-July, and on July 27th I found seven more nests and ringed six broods during August, one of which was still in the nest as late as September 1st.

I do not suggest that each pair has a second nest, but judging from what I have found it would appear that perhaps half or one-third of them do so. The extension of the reed-beds into deeper water as the summer advances makes the nests less accessible, for the birds are apt to build their later nests further out from the bank, as the new reeds in the deeper water become tall and dense enough to support them; some of the later nests are doubtless overlooked in this way. I have, however, found it profitable to look for a second nest within a few feet of the first, and it had never occurred to me to doubt that these and the earlier broods were the progeny of the same pairs of birds.

This evidence, though presumptive, seems to be almost conclusive and is based on the marking of about 120 broods and the examination of many more nests. I see that Mr. J. Beddall Smith (*British Birds*, XII., p. 279) also came to the conclusion that they were "sometimes and probably usually double-brooded" in Essex, and Mr. E. E. Pettitt (XII., p. 236) recorded a case of an isolated pair which reared a Cuckoo and then laid again in the same nest.

There is one habit of the nestlings that I do not remember to have seen recorded. They are extremely noisy when handled and make a loud squeaky note—even before they have grown any feathers. This noise causes the adults to redouble their usual chorus of alarm-notes, which continues while the nest is being examined.

A. W. BOYD.

UNDOMED NEST OF WILLOW-WARBLER.

My friend, Mr. W. C. Neild, of Little Leighs, Essex asked me to identify a nest in his orchard on May 23rd, 1932. The nest was a Willow-Warbler's (*Phylloscopus t. trochilus*) and

contained seven eggs, but it was absolutely open and had not the least attempt at a dome, although built of the usual materials. I asked if the nest had ever been at all domed, but was told that it had always been an open nest and that Mr. and Mrs. Neild had watched the birds building it before any eggs were deposited. The nest was among grass in a depression in the ground. J. H. OWEN.

NORTHERN WILLOW-WARBLER OFF ANTRIM.

A WILLOW-WARBLER, killed striking the lantern at the Maidens Lighthouse, off the Antrim coast, on May 7th, 1931, when examined in the flesh by me appeared to be a specimen of the northern race *Phylloscopus t. eversmanni*. I sent the skin to Mr. H. F. Witherby, who has confirmed the identification. The opportunity was also taken of letting Mr. Witherby examine the skin of the Willow-Warbler killed striking at Inishtrahull, off Donegal, on May 7th, 1904, from the Barrington collection in the National Museum, Dublin, ascribed to this northern race. Mr. Witherby confirms the identification in this case also, although Mr. A. R. Nichols, in the *Catalogue of Birds in the Barrington Collection*, p. 30, remarks that it is probably a faded specimen of the common form.

These appear to be the only two Irish-taken specimens on record of *Phylloscopus t. eversmanni*. The wing measurement of the Inishtrahull specimen is 67 mm. and of the Maidens specimen 68 mm. G. R. HUMPHREYS.

LATE FIELDFARE AND BLUE-HEADED WAGTAIL IN LINCOLNSHIRE.

I WAS at North Somercotes, Lincolnshire, during June, 1932, and on the 3rd I saw there a Fieldfare (*Turdus pilaris*), in full breeding plumage, and a Blue-headed Wagtail (*Motacilla f. flava*). I was surprised at seeing only one Yellow Wagtail (*M. f. rayi*), as the country around seemed very suitable for it. NORMAN H. JOY.

STONECHAT WITH *VOLUCELLA BOMBYLANS*

THE accompanying enlarged photograph of a male Stonechat (*Saxicola t. hibernans*) going to feed its young was taken by F. A. Reiss at Seaford, Sussex, on July 17th, 1932.

The camera (Kodak No. 1A) with portrait attachment was set up 2 ft. 3 in. from the twig, and an exposure of 1/50 second was given, with a stop of F. 6.3, as it was a very dull day.

Though the insect looks rather like a bumble bee, it has been positively identified by Miss Aubertin, of the Natural History Museum, as a fly, *Volucella bombylans* L.



I expect it does not very often happen that the food of a small bird can be determined from a photograph (except possibly daddy long legs (*Tipula*)). J. F. THOMAS.

LATE NESTS OF HEDGE-SPARROW AND ROBIN IN SUFFOLK.

ON September 13th, 1932, in east Suffolk, I flushed a Hedge-Sparrow (*Prunella m. occidentalis*) from its nest with three eggs. A little later on the same day, noticing a Robin (*Erithacus r. melophilus*) sitting on a gate with food in its bill, I watched it and found a nest in the bank with young Robins about a week old. G. BIRD.

STATUS OF GREAT SPOTTED WOODPECKER IN LANCASHIRE.

IN Mitchell's *Birds of Lancashire* (Howard Saunders' edition, 1892) the Great Spotted Woodpecker (*Dryobates m. anglicus*) is referred to as being seen "at times" in the thickly-wooded districts and as nesting regularly in "some few". Details are added, but the species was obviously much rarer than it is at present, though apparently more widely distributed.

Since that time, although its distribution has become very much more restricted, owing to the gradual disappearance of suitable cover and the spread of industrialism in the central and southern portions of the county, there has been nevertheless a substantial increase in numbers. This has become so

marked of late years that a more satisfactory account of the status of the species can now be given.

In the north to a point skirting the Fylde, Mr. H. W. Robinson has evidence of at least nine pairs in several localities and describes it as being present in all the well-wooded districts. The valleys of the Hodder and Ribble, with their great tracts of forest, hold the largest number of breeding pairs in the county. The numbers on the first-named are exceeded on the principal stream, but as all the breeding areas are on more or less protected ground, no reference will be made to numerical strength in this region, desires having been expressed that nesting haunts shall not be indicated.

It can, however, be stated that we have both independently noted westward extension in 1931 and 1932 in one large stretch of timber which follows the course of a river for several miles.

There is no evidence of recent date that the bird occurs further west than Ribchester for the purposes of breeding. With the exception of two pairs occupying well-known park lands further south, the present distribution is as described above; the species nesting sparingly north of the Fylde, and being most numerous and apparently increasing in the river valleys abutting on the Pennines.

CLIFFORD OAKES.

EDMUND BATTERSBY.

TWO CUCKOOS LAYING IN SAME NEST WITHOUT RIVALRY.

CUCKOOS (*Cuculus c. canorus*) appeared to be less numerous in 1932 than in 1931 in north-east Hampshire. I found three hen Cuckoos victimizing Meadow-Pipits (*Anthus pratensis*), all working the same corner of a common. Frequently two hens sitting side by side on the same branch watched the same nest in harmony. Sometimes one turned round, and they sat head to tail as long as 1½ hours without moving. One of these laid a small green egg, the other a large grey one, and I found both together in the same Meadow-Pipit's nest. Later, the grey egg occurred in another Meadow-Pipit's nest, and the green one in a Linnet's (*Carduelis c. cannabina*) only four paces distant.

H. T. GOSNELL.

CUCKOO'S EGG IN BULLFINCH'S NEST.

ON May 28th, 1932, I found in a large blackthorn thicket near Great Bardfield, Essex, a nest of a Bullfinch (*Pyrrhula p. nesa*). I could not reach the nest and so put a mirror over it: there were four eggs, one of which struck me as rather unusual, but it was a very bad light and I left it alone. I revisited the wood on June 1st, and found that in the meantime

an oak tree had been felled and had partially demolished the thicket to within a few inches of the nest, which was deserted and now within easy reach. The nest still contained eggs, and on removing them I was amazed to see that the unusual looking egg was that of a Cuckoo (*Cuculus c. canorus*) and not a Bullfinch's. In 1911 I recorded seeing a young Cuckoo raised by a Bullfinch (*British Birds*, Vol. V., p. 136). J. H. OWEN.

INCUBATION- AND FLEDGING-PERIODS OF KESTREL.

WE have received some notes on the breeding of the Kestrel (*Falco t. tinnunculus*) from Mr. W. Wilson and Mr. A. Johnstone.

In Mr. Wilson's notes, made near West Kirby, Cheshire, in May, 1932, the first nest contained four eggs when found and a fifth was laid subsequently. The young were all hatched on June 14th and the incubation-period is estimated by him at 29 days, calculated from the day the last egg was laid to the day the last young one was hatched. One of the young was fledged on July 12th and the others on the 14th. This gives a fledging-period of 30 days for the youngest bird.

In the second nest (found on May 31st) were two newly hatched young and three eggs, one chipping and one infertile. The young were covered with white down. On June 6th they were very weak and covered with fairly thick white or very pale grey down. On the 9th there were no signs of feathers, but they opened their beaks in an effort to snap. On the 15th tail- and wing-feathers were sprouting and were half an inch long. The young were much stronger now and lay on their backs, striking with their claws. On the 22nd the tail-feathers were two inches long, wings well feathered and down in patches; feet very much stronger. On July 1st one bird had flown when the nest was reached; another was on a branch outside and the two remaining in the nest left later in the day. All the down had gone and the plumage was complete, but the eye was very large for the size of the head, giving an immature look. The fledging-period of the elder birds must have been about 33-31 days, but in the case of the younger birds probably several days less. The first flight of the young from the first nest was 65 yards into another tree. From the second nest one flew 150 yards but finished exhausted on the ground.

In Mr. A. I. Johnstone's notes, taken near Harrow, Middlesex, a nest with five eggs was found on May 14th. On May 21st it had been robbed and only one egg remained, but by May 31st four more had been laid. In this case the exact

incubation-period cannot be estimated as the date of the laying of the last egg is not known. One egg (probably the first) proved infertile; two had hatched by June 24th and four by June 29th. If the last egg was laid on May 28th, the incubation-period of the last egg was not less than 28 days.

When a few days old the young made a faint cheeping sound and gave feeble pecks at one's fingers. Claws, pale yellow; down, light grey. On July 1st the young were stronger and pecked vigorously. By the 5th they had grown enormously; they lay on their backs and scratched with their claws, which were now dark grey with black streaks in them. On July 7th the primaries were beginning to push through and by the 11th both primaries and tail-feathers were showing. From the 12th to the 20th, feathers appeared rapidly, and by the latter date they were fully feathered, with down remaining on head, breast and shoulders only. The foreheads were the only unfeathered parts of their bodies on the 23rd, and on the 26th three of the young flew when the tree was climbed. The fourth, about $1\frac{1}{2}$ inches smaller than the rest, allowed itself to be touched before flying. Calculating from June 28th, the fledging-period of the youngest was 28 days, but probably several days longer in the case of the older birds.

As will be seen from the above summary it is not possible to obtain accurate data of incubation- and fledging-periods unless the actual dates of deposition and hatching of the eggs are noted, and also the time when incubation began. So far, all the evidence goes to show that the eggs are laid with an interval of one clear day between, i.e., on alternate days, and that incubation begins with the first egg laid.

F. C. R. JOURDAIN.

MOVEMENTS OF RINGED SPARROW-HAWKS.

DURING the past eight years the writer has ringed sixty-nine young Sparrow-Hawks (*Accipiter n. nisus*) and to date twelve have been reported, or seventeen per cent. of the total ringed. These recoveries only indicate a local movement on the part of the Sparrow-Hawk which was, perhaps, to be expected, as its food supply, consisting mainly of small birds, is fairly abundant throughout the year, whilst nesting-sites are numerous, and the species as a whole cannot be under any great urge to migrate. It must also be borne in mind that the Sparrow-Hawk is treated as vermin and shot at sight and for this reason there must be very few areas, if any, that are supporting the maximum number of these birds. The local movements made by the birds ringed by me are chiefly in a north-easterly direction or south-easterly direction, but

further ringing is necessary before any reliance can be placed upon such directional movements. No bird has been reported further than sixteen miles from its birthplace. Most have been reported during their first year: the oldest is two and three-quarter years. There is no record of a bird returning to its birthplace to breed, and hence these ringing records throw no light upon the problem of why a certain breeding-site, such as a small wood or plantation, will year after year attract a pair of Sparrow-Hawks, despite the fact that each year the pair is shot or trapped. It should be noted, however, that there are three records (two being birds of the same brood) of birds reported from the same area, the Penrith neighbourhood, and another three records (two of birds of the same brood) of birds from the Carlisle neighbourhood.

In the following table birds of the same brood are bracketed together. All localities are in Cumberland.

No.	Ringed.	Recovered.	Distance in miles.
{ 78090	Curthwaite 16.7.25	Brampton 24.4.28	15 N.E.
{ 78092	" "	Carlisle 30.12.25	6 N.E.
{ 78093	" "	" —.3.26	6 N.E.
{ 77838	Welton 3.7.25	Raughton Head —.12.26	3 N.E.
{ 77839	" "	Wigton 2.12.25	6 N.W.
{ RR1850	Hesket-Penrith	—.6.29	12 S.E.
{ RR1856	Newmarket 19.6.27	" 24.9.27	12 S.E.
{ RS3506	Curthwaite 24.6.30	Gaitsgill 12.7.31	4 E.
{ RS3511	" "	Penrith 23.3.31	16 S.E.
RR1938	Welton 27.6.29	Carlisle 29.10.29	8 N.E.
RR1926	Curthwaite 26.6.29	Dalston 4.6.30	3 N.E.
RT1310	Cardewlees 27.6.31	Solway Moss 21.8.31	12 N.

R. H. BROWN.

[Our records of ringed Sparrow-Hawks, other than Mr. Brown's, would seem to bear out the facts stated. These show very little movement in directions not constant, but to some extent northerly; there is no record of a young bird returning to breed in the place it was hatched; and the lives of the birds reported have been very short, there being only one other besides that mentioned by Mr. Brown, which had reached its third year.—H.F.W.]

GADWALL IN LANCASHIRE.

IN *British Birds*, Vol. XVII., p. 309, I recorded the eighth specimen of the Gadwall (*Anas strepera*) in Lancashire, viz., a female shot on Leighton Moss near Carnforth, north Lancashire, during the winter of 1923-4.

I can now add a ninth, also a female, shot in the same place as the last, on November 4th, 1932.

H. W. ROBINSON.

POCHARD BREEDING IN SURREY.

As there appear to be very few breeding records of the Pochard (*Nyroca ferina*) in Surrey it is worth recording that a pair bred at Beddington in 1931. On July 22nd I saw a female with one newly hatched young one on the gravel-pit ponds.

R. S. R. FITTER.

TUFTED DUCK BREEDING IN DEVONSHIRE.

THERE seem to be no early records of the nesting of the Tufted Duck (*Nyroca fuligula*) in Devon. Messrs. D'Urban and Mathew had no definite information to offer, though they thought it possibly bred now and then at Slapton Ley and also near Barnstaple. It is the more interesting, therefore, to find that, according to keeper Perrin of Slapton (per Mr. E. M. Nicholson), Tufted Duck (number of pairs not stated) "first bred on Slapton Ley in 1931, and at least four to five pairs stayed to breed in 1932. One pair reared five young".

As I stayed at Slapton from June 18th to 27th, 1932, I can add my testimony as to the presence of these birds. Three pairs were constantly on the water, the drakes all day, the ducks very often; so often, indeed, that they could hardly, even at this date, have begun to sit. In addition to these three pairs a few odd birds, both drakes and ducks, appeared from time to time.

W. WALMESLEY WHITE.

MOORHEN TAKING POSSESSION OF JAY'S NEST.

ON May 14th, 1932, as I was going through Foxes Wood (Great Bardfield, Essex) with two boys, I saw a bird leave a nest of a Jay (*Garrulus g. rufitergum*) some distance in front of us. One of the boys got up to it and found that it contained seven eggs of a Moorhen (*Gallinula chloropus*) considerably incubated. When I expressed surprise he told me that he had seen that the bird leaving the nest was a Moorhen and not a Jay. This was a new nest and the Moorhen had added very little material to it. It was about ten feet from the ground in a big blackthorn bush. This is the first time I have known Moorhens use a Jay's nest, but I have many times found them using old Magpies' nests both in Essex and in the Severn Valley; some of these nests were a considerable height above the ground and quite a long way from any water.

J. H. OWEN.

BIRDS AT ST. KILDA.—Some notes on early autumn migrants at St. Kilda (July 22nd to August 13th, 1931) are given by Messrs. J. Buchan, T. H. Harrison and D. Lack (*Scot. Nat.*, 1932, pp. 3-8). Comparisons are made with

observations of previous observers. A pair of Lesser Black-backed Gulls (*Larus f. graellsii*) nesting, and the occurrence of a Common Sandpiper (*Tringa hypoleucos*), several Red-shanks (*T. totanus*), an Arctic Tern (*Sterna macrura*) and some Common Gulls (*Larus canus*) are the chief items.

Mr. Harrison also gave an interesting paper to the British Ornithologists' Club on the breeding birds of St. Kilda in 1931. In this paper (*Bull. B.O.C.*, LII., pp. 32-36) he describes the Starling (*Sturnus vulgaris*) as very much decreased, there being only nine pairs in 1931 as against several hundreds in 1930; the decrease being apparently due to the removal of most of the domestic sheep. There was only a single Tree-Sparrow (*Passer montanus*), whereas it was formerly common in the village. Hooded Crows (*Corvus cornix*) were also reduced to five pairs in 1931 from about fifty in 1925-30. The Rock-Pipit (*Anthus s. petrosus*) was found all over the island (up to 1,300 feet in the centre) to the exclusion of all but six pairs of Meadow-Pipits. The following numbers of pairs of the St. Kilda Wren (*Troglodytes t. hirtensis*) were counted: Hirta forty-five, Dun eleven, Soay nine, Boreray three. Mr. Harrison states that the birds in the field showed distinct differences, some being light and others dark. Three nestlings examined had no down on the occipital tract. The statement in the *Practical Handbook* that these birds "probably . . . pick up small crustacea from the shore" he considers misleading, as the species was noticed to be almost entirely cliff-feeding.

ROOKS EATING APPLES.—Mr. H. Collison sends us a note of Rooks (*Corvus f. frugilegus*) raiding an apple tree at Reading and carrying the fruit across the river in their bills. The paragraph on the food of this species in the *Practical Handbook* is too condensed and should have contained reference to apples, which were recorded as eaten by Rooks as far back as 1864.

EARLY ARRIVAL OF SNOW-BUNTING IN CAITHNESS.—Commander A. T. Wilson informs us that on September 26th, 1932, he saw a number (perhaps 30-40) of Snow-Buntings (*Plectrophenax nivalis*) at Braemore. The stalker who accompanied him stated that he had seen the Snow-Buntings this year on September 10th, the earliest date in his experience. This is certainly an early date, but not unprecedented.

LARGE BROOD OF MUTE SWANS.—Baron R. C. J. Snouckaert van Schauburg tells us of a pair of Mute Swans (*Cygnus olor*) with a brood of eleven cygnets. They were reared this year at a country seat in Holland called Boekesteijn, near 'sGraveland.

Stevenson, in the *Birds of Norfolk*, records clutches of ten and eleven, and cases of twelve and even seventeen eggs in a nest have been recorded in *The Field*. The largest brood of young of which I have any note is one of twelve at Beddington Park in 1850 (*Zool.*, 1851, p. 3234). F. C. R. JOURDAIN.

SHOVELER IN SURREY IN JUNE.—Mr. R. S. R. Fitter informs us that a pair of Shoveler (*Spatula clypeata*) were present on a small water at Beddington on June 4th, and 5th, 1932, but by the 19th they had disappeared and did not return. Mr. Howard Bentham informs us that the birds were there on May 14th and that he has no previous record of the Shoveler in Surrey in June.

SANDWICH TERN IN MIDDLESEX.—Mrs. Boyd Watt records (*Field*, 15.x.32, p. 588) that she saw a Sandwich Tern (*Sterna sandvicensis*) on September 25th, 1932, at the Highgate Ponds.

The bird was beating up and down the ponds (which lie between Kenwood and Parliament Hill Fields), now rising high, now hovering and diving for fish. It went away in a north-easterly direction. The first and only other record of the species for Middlesex was one seen at Littleton Reservoir on August 20th, 1931 (*antea*, Vol. XXV., pp. 134-5).

LETTERS.

CENSUS OF STARLING ROOSTS.

To the Editors of BRITISH BIRDS.

SIRS,—I am attempting to carry out a census of the Starling roosts of the British Isles this winter. May I appeal to your readers to assist me in this by sending me information about any Starling roosts which they may have observed? Though I am principally concerned with the roosts which are at present occupied, I am very glad to hear of roosts observed in the past. I hope, by locating all the roosts in use at the same time, to get some idea of the number and distribution of Starlings in different parts of the country. It is, of course, impossible to estimate the actual number of individuals, even if they were all to be found in the big roosts.

In an investigation of this size it is essential to have the co-operation of as many observers as possible, so that the country may be properly covered. I am anxious to get in touch with observers who would be willing to oversee a definite district, and to verify and amplify the numerous reports which I am getting from all over the country. I should be specially grateful for assistance of this kind, but any information, either about roosts or of their absence over a considerable area, would be most useful.

The season in which the roosting habit is practised extends from August to March, but I intend to concentrate on one month, January, when the movements from one roost to another are at a minimum. Should the results at the end of this winter justify it, the investigation will be continued for another season, using this winter's data as the basis for a more complete survey.

I shall be very grateful to anyone sending me the answers to the questions set out below, and I shall be glad to supply additional copies of the questionnaire.

1. The name and address of the observer.
2. The date of the observations.
3. The exact position of the roost with reference to roads, villages, etc.
4. Do the flocks come to the roost from all sides equally? If not, from which side do most of them come?
5. Description of the roost. What is the size and kind of trees, bushes, reeds, etc.?
6. What is the approximate number of birds in the roost? Please state the method you use in estimating this.
7. What is the direction of flight of flocks seen more than five miles from the roost? The object of this is to determine the area served by the roost.
8. During what periods of the year is the roost in use?
9. How many years is the roost known to have been occupied?
10. Please give any details of disused roosts or past movements from one roost to another, with dates when possible.
11. What other birds use the same roost?
12. Is a Hawk often present at the roost? If so, what species?
13. Has there been any interference by man, such as attempts to drive the birds away? If so, what were the results?

THE VICTORIA UNIVERSITY OF MANCHESTER, B. J. MARPLES.
ZOOLOGY DEPARTMENT.

November 17th, 1932.

ROSEATE TERNS WITH THREE EGGS.

To the Editors of BRITISH BIRDS.

SIRS,—I am glad to note, from Mr. Humphrey's letter (*antea*, p. 204), a further case of three eggs in a Roseate Tern's nest. The congestion in the ternery referred to could not have been so great as on the occasion of Mr. Humphrey's visit in 1929, for, although there were many birds there this season, there was ample space for more nests.

The matter raises a point on which I, at any rate, would welcome some enlightenment.

I have heard and read, many times, the statement that clutches of eggs larger than normal are the product of two birds. Mr. Humphreys seems to lean toward this belief. I would ask: Is there any proof on which this belief is founded, and, if so, where can it be seen?

It would seem likely that when two eggs in a nest are so different from the others as to make reasonable the suggestion that two birds were responsible, that there should be a contest for possession. Has such a contest ever been observed? In the cases of the two Roseate Terns' nests in question, though I was present for long periods on different days close to the nests, I saw nothing to suggest that any other bird than one pair in each case was interested in either nest. At Blakeney Point, in 1931, there were eight nests of the Common Tern (*Sterna hirundo*) each containing four eggs. There was no question of congestion here as there is always ample room in this ternery. I visited these nests every morning from laying to hatching. During this period of three weeks and more I never saw any indication of a third bird laying claim to a share of the eggs in any of the nests.

It would be interesting to know if there has ever been a proven case of bigamy among Terns; by which I mean—has a continuous observation been made of a nest, the incubation of which has been shared by a third bird?

The assertion that large clutches are a joint production is based, usually, on some dissimilarity of size, colour or markings. Mr.

Humphreys makes this point in his letter. Is this assertion founded on anything sufficiently strong to be accepted as proof? Variations in these particulars constantly occur in normal clutches which are unquestioned in origin and are familiar enough to anyone who has seen any extensive range of eggs. Why, then, should similar variations in "fours" be considered proof of double parentage; if in one case, why not in the other? Reverting to the Blakeney Point examples, I, in order to preserve a record of their appearance, photographed each clutch after having weighed, measured and noted the colour. The results lie before me. In two cases all four eggs were alike in colour and markings; two had all eggs marked in the same way, but two of the eggs had the ground-colour slightly darker; one had all four eggs marked alike, three being alike in colour, the other being decidedly darker; another clutch is the same, the fourth egg being very dark; the remaining two clutches had the eggs differently marked in pairs. From the appearance of the eggs in these clutches there seems nothing to favour the theory of the "double origin". I have also a photograph of a "four" taken at Ainsdale, all the eggs being identical, and one from Chesil Bank in which one egg is dissimilar.

There is, by analogy with other animals, no reason why a Tern should not lay more than the normal clutch. From the human species downwards, individuals—witness the American lady who is credited with producing sixteen offspring at four births—exhibit, from time to time, a fecundity which is above normal. This excess is traceable in some cases to a super-abundance of food. As, for example, Short-eared Owls and the vole plagues. There does not seem any reason why, among hundreds of Terns, there should not be an occasional bird with this physiological tendency to excess. Or, alternatively, why a bird should not be present in a ternery which, by luck or good management, manages to secure a surplusage of food during the laying period.

Further, it is to be noted that this tendency to "over-plus," which is to be expected if the cause is physiological, seems to exhaust itself with the laying of four eggs: True there are cases of five eggs in one nest—I have notes of eight such examples—but I have still to hear of a "six". Yet, if two birds do lay in one nest why should there not be instances of each bird laying its full clutch of three?

My belief, based on the above considerations and on the appearance of eggs in "three-plus" nests, is that large clutches are likely to be the product of one bird. The possibility of a Tern stealing an egg from a neighbour does not seem to have been considered.

May I conclude by hoping that Mr. Humphreys will not think that I am trying to score off him. I merely use his very useful letter as a starting point in my groping for knowledge on a subject which does not seem to have received adequate attention. In any case I am indebted to him for help, in a round-about way, in connection with my study of Roseate Terns. And I should like to take this, the only opportunity a stranger to him has, to extend to him my gratitude.

GEO. MARPLES.

[In *British Birds*, IX., p. 73, will be found a note by Mr. H. Massey, in which a nest of Common Tern with ten eggs is figured and another with six eggs is mentioned, both found by Mr. G. H. Lings in 1915.—F.C.R.J.]

THE MANX SHEARWATER—*A Correction.*

To the Editors of BRITISH BIRDS.

SIRS,—Mr. R. M. Lockley, whom we may call *the* authority on the habits of the Manx Shearwater (*Puffinus p. puffinus*), has kindly pointed

out an error in my *Birds of the British Isles*, Series II., p. 286. When sailing through a party of feeding Shearwaters, I thought that birds with brown heads and cheeks were young birds of the year. Mr. Lockley points out that in early August "few young birds have left their holes and certainly none would be strong on the wing until late August or early September." The browner birds, he thinks, were breeding birds with soiled and worn plumage, which would later be moulted at sea, and the darker ones non-breeding birds, perhaps a year old or even more. I am sorry that this evident mistake could not be corrected in the 1932 edition, just published, but if there is call for another it shall be altered.

T. A. COWARD.

REVIEWS.

LOCAL REPORTS.

Report of the Cambridge Bird Club, 1931.

THIS Report contains much of interest well put together. The account of birds in Cambridgeshire for the year has some notable items: Rock-Pipits (*Anthus s. petrosus*) on several occasions and Alpine Pipits (*Anthus s. spinoletta*) on October 6th, December 11th and 30th, and possibly on October 31st. Two Alpine Accentors (*Prunella collaris*) were watched for some time at very close range with binoculars by Mr. M. E. W. North on April 30th, close to Clare College. One of them was first seen when uttering a "very striking" song from a beech tree. It is a pity that more detail is not given of the birds' appearance; the throat spots are described, but none of the other distinctive and easily noted characteristics are mentioned, while the bird is stated to have been somewhat similar in size to a Hedge-Sparrow, whereas it is at least a third larger. A Wryneck seen on April 26th is stated to be the first recent record for the county. Short-eared Owls nested not only at Wicken (four or five pairs) but almost certainly at Six Mile Bottom. A pair of Montagu's Harriers and several Garganeys bred. In a separate article we find an interesting list of waders at the sewage farm. This includes such rarities as Dotterel, Temminck's Stint, Wood-Sandpiper, Spotted Redshank, Grey Phalarope and Black-tailed Godwit. A useful study of a Rook roost is given by Mr. T. H. Harrison (one of the editors), while Mr. M. E. W. North (the other editor) contributes some new and important notes on heronries, in which one near Mepal, reported extinct before 1885, was found to be re-colonized (ten nests) in 1931, while one of twenty-one to twenty-three nests was found near Wisbech and was said to have been in existence for at least fifty years. This was entirely overlooked in our census. We are glad to see in an article on the Chalklands by Mrs. Brindley that Quail were comparatively plentiful in 1931.

Report of the Oxford Ornithological Society on the Birds of Oxfordshire, Berkshire and Buckinghamshire, 1931.

THE Oxford Ornithological Society continues to make excellent reports on its large area. From the numerous interesting notes arranged under species in each county the following may be specially mentioned: Crossbills probably bred near Stonor (Oxford); Willow-Tits were noted in Oxfordshire and Berks.; a pair of Pied Flycatchers was seen in June and July at Wytham (Berks.) and may have bred but no nest was found, a cock (alone) was seen at the end of April and beginning of May in Wychwood Forest (Oxon.); a nest of Marsh-Warblers was found in Chalfont Park (Bucks.); a Buzzard was seen over Oxford on June

21st; the Shoveler bred at Otmoor and a pair of Curlew appear to have bred there; an Oyster-Catcher was seen on December 16th near Iffley Lock; there is some evidence for the presence of Spotted Crakes in summer at Iffley and Leafield; and at least three and possibly four Quails were heard in the middle of June on the Berkshire Downs.

The Report also contains the results of special investigations into the breeding status of the Wheatear, Wryneck and Stone-Curlew in the three counties, a useful summary of movements of birds in the counties as shown by ringing, and a report on the ringing undertaken at the various trapping stations instituted by the Society and most successfully operated by its members.

The London Naturalist, 1931.

THE publication of the London Natural History Society contains, as usual, several papers of interest to ornithologists ("Romney Marsh and its Birds," by Dr. H. L. Lack, "Some Structural Observations on the Waders," a valuable article by Dr. Carmichael Low, and "Notes on the Coots on Fetcham Pond" by Mr. H. J. Burkill) besides the annual ornithological records. Among the latter we find that the Pochard nested again at Barn Elms Reservoir and also in Richmond Park and possibly in Osterley Park. The Report includes a large number of interesting notes from the reservoirs, but it would seem that too many ornithologists spend their time at the fascinating pursuit of reservoir watching and that there is much overlapping in this work in the London district, to the detriment of other observation.

Report on Somerset Birds, 1931.

THIS Report contains many good notes carefully edited and arranged. A Blue-headed Wagtail with a female was seen on June 10th and 13th and a pair of Black-necked Grebes on June 28th, but in neither case is there definite evidence of breeding. Marsh-Warblers are recorded as on the increase. Special attention has been paid to the breeding status in various districts of the Redshank, Snipe and Woodcock; the latter would appear to be a very scarce nester in the county. A census of nests of Swallows and Martins taken in June, 1929, and again in 1931 over the same area near Bruton by P. A. D. Hollom is of considerable interest and shows that the Swallows increased from 52 to 60, while the Martins decreased from 104 to 63, for no reason that could be ascertained.

Report of the Marlborough College Natural History Society, 1931.

THE ornithological section of this Report contains a number of notes arranged in the cryptic form (almost like a code) which has been used for some years. The Tufted Duck, we note, continues to extend in range in the district and the Land-Rail is recorded as definitely on the increase, while a Stone-Curlew's nest was found and Green Sandpipers were seen.

Eton College Natural History Society. Report for 1931-2.

THIS Society has wisely chosen to watch systematically one small area, and for this Black Potts, an area of six acres with vegetation consisting chiefly of willows, osiers, grass, nettles, and including an island and a garden, has been selected. Here some fifty-three species were noted, of which over thirty were found nesting. We hope the Society will continue this work and note changes in vegetation and birds, while more certain observations are required on the Marsh-Tits (and possibly Willow-Tits) and Marsh-Warblers.

LE GERFAUT

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EXPERIMENTS ON COLOUR SENSE IN BIRDS.

BY

GEORGE MARPLES, A.R.E., A.R.C.A.

FOLLOWING a report by Dr. Zuckermann to the Zoological Society, in March, 1932, that he had discovered an awareness of colour in a young baboon, an interesting abnormality, *The Times* printed a number of letters from correspondents who asserted that their favourite cat, dog or horse could readily distinguish at least one colour.

The point that all the writers seemed to miss was that animals, while they may be colour-blind, as is generally understood, are not tone-blind. And that it was, most probably, the tone of the garment which the pet animal recognized, not its colour.

That this might be the case was brought out, unconsciously, by several of the statements, particularly one of a dog, which could distinguish between a "rather light green" dress and a "dark grey" dress, and another of a dog which mistook "King's College" colours—purple and white—for "Third Trinity" colours—dark blue and white—and yet could readily distinguish between these and other College colours. In the first case the tone of light green is so *different* from the tone of dark grey that there is nothing remarkable in the dog's ability to distinguish between them. While in the other case the tone of purple being the *same* as dark blue, only a sense of colour would enable the dog to recognize each and as it could not there is proof of its colour-blindness.

As there is a wide misconception as to the meaning of "tone" it may not be amiss to say that "tone" is something quite different from "colour": "colour" being the "hue", e.g., red or pink, green or lavender; while "tone" is the strength of the "hue", e.g., the degree of its darkness or lightness. Two blues, for example, may be identical in "colour" but different in "tone", i.e., one may be light, the other dark; two colours may be totally different in "hue", green and orange for instance, but identical in "tone", i.e., their strength may be the same.

Some time ago I made certain observations on the "colour" and "tone" sense of birds by experiment on the Ringed Plover (*Charadrius h. hiaticula*), cf. *British Birds*, Vol. XXV., pp. 34-44. Experiments for the same purpose I have made on the Nuthatch (*Sitta europæa affinis*), the Great Tit (*Parus major newtoni*) and the Blue Tit (*Parus cæruleus obscurus*), particulars of which are now given.

For Test I. I prepared a set of pea-nut pods by painting each a different colour. The colours used were white, light blue, orange, green, red, dark blue and purple. One was left its natural colour and all were spread out on the ground.

The Nuthatch came at once and walked about among them looking at them dubiously, then, seizing the orange pod, wedged it in a crevice close at hand and proceeded to dig out one of the kernels. He then came back and after touching the white pod with his beak, flew off. Returning, he took the other kernel out of the orange pod, carrying it away.

The coloured pods proved somewhat disconcerting to other birds, the Marsh-Tits and Chaffinches leaping into the air several inches startled, as though by something strange. House-Sparrows looked at them with suspicion. Hedge-Sparrows seemed quite oblivious of their presence.

The Nuthatch appeared again and carried off the green pod, then, coming back, walked round inspecting the pods but touching none. Up to this time he had taken the orange pod, similar in colour and tone to the real thing, had taken the green, different in colour but similar in tone, but, and this is strange, had ignored the real pod.

As he now stayed away a long time, and thinking the position of the pods on the ground might be a disturbing factor, I fixed them in holes of appropriate size drilled in a section of a tree trunk.

The bird returned, broke into the natural nut, then carried it off. Coming back he attacked the purple pod, the white, the red and next the dark blue, which he partly broke open, then carried off. When he came back he broke into the light blue pod and extracted the kernel.

The female Nuthatch now arrived and took the remaining kernel from the light blue pod. Her mate returned, attacked the purple pod, then attended to the red. The female stood shivering her wings and opening her beak until he had extracted a kernel from the purple pod to which he had returned. She then tackled the red pod and carried off the kernel. White was the only pod left and this, in ten minutes, was removed, shell and all.

For Test II. I repeated the first test by fixing a second set of pods in the tree trunk, having added pods painted black and pink.

In two minutes the male Nuthatch attacked the white pod, left it, returned, resumed his attack on the white, transferred himself to the orange pod from which he extracted a kernel, carrying it off. Coming back he went again to the orange

pod, got out the other kernel and left. He came back and breaking open the green, got the kernel and flew. Next he resumed work on the white pod from which he took the kernel. Back again, he carried off the natural pod. Returning he tapped the dark blue pod, the black, the light blue, the pink, the purple, then the dark blue again, following it with the pink pod from which he extracted the kernel. He came back, attacked the dark blue, went, came again, had another try at the dark blue but left it. The female now came and had a go at the dark blue pod, then tried the light blue from which she took a kernel. The male returning, attacked the dark blue pod, left it, tapped the black, left that and went back to the dark blue from which he got a nut. After eating this he went to the light blue pod and took the other nut. Again he tapped the black, next attacked the purple pod, opening it, then returned to the black, getting a kernel. On his return he resumed operations on the black pod and found the other nut. The female came and walked all over the stump but did not touch any of the pods. When he returned he tapped the pink pod, then pecked the red which, shortly, he left. Coming back he again tapped the pink pod, then pecked hard several times at and broke open the red pod, carrying off the nut, then, returning to the red, took the other kernel. After this he got the other nut from the purple pod and finally, on his return, extracted the last kernel from the pink.

As some Great Tits had been showing an interest in the proceedings I allowed them, in Test III., a free hand. For this experiment the pods were painted and laid out in a line on the ground in the following order: ultramarine blue, orange, prussian blue, black, red, green, pink, light blue, natural pod, purple, white. Single pods were used this time by reason of the two kernels in the double pods complicating matters.

A Great Tit was the first to arrive, he carried off the white pod. The Nuthatch came, walked along the row of pods and seeing the natural pod took it. The pink pod was now taken by the Great Tit and on his return he selected the prussian blue. When the Nuthatch came back he attacked the orange pod but, leaving it, decided to carry away the green one. The Great Tit, coming back, pecked the red pod, then flew off. He returned shortly and after trying several times to pick up the red pod gave it up and went over to the orange pod, which he removed. The purple pod was now carried off by the Nuthatch. Red again attracted the Tit, but again he left it to attend to the black pod which he removed. On his

return ultramarine blue was the pod he selected and this, after pecking it several times, he carried away. Once more he returned to the red pod and this time he removed it. Light blue was the only pod left and this, when he came back, he removed quickly.

As it was felt that the rattle of the kernel in the pod, which could be felt and heard when the pod was touched, might help the bird to recognize the coloured pods as containing something edible, the next two tests were made with extracted kernels.

Two sets of kernels were painted with the same colours as the last (pod) experiment. To each set was added an imitation kernel made of carbolic soap, which is almost exactly the same colour and tone as the real nut, and another, also of carbolic soap, painted green.

In the first of the kernel tests, Test IV., the kernels were laid out on the ground in a row in the same order as before, the soap kernel being placed between prussian blue and black and the green-painted soap kernel separating light blue and the natural nut.

Blue Tits had not been able to cope with the pods but the much smaller kernels permitted them to join in.

The unpainted natural kernel was at once taken by a Blue Tit. A Great Tit removed the red and on his return carried off the uncoloured soap kernel, evidently satisfied as to its authenticity. On his coming back he took the prussian blue nut and on his next return he carried off the pink one. He followed this by flying off with the white kernel. Returning, he touched the ultramarine nut, walked to the black which he pecked, touched the light blue, then carried off the orange. Purple was the next colour he selected, and on coming back first pecked the ultramarine blue kernel, then the black, next the lilac and then the green, after which he flew without taking any. Nuthatch now came; he picked up the ultramarine blue kernel, dropped it, picked up the black, dropped that, returned to the ultramarine blue, lifted it, then walking along the line picked up the light blue kernel but flew without taking any. The Great Tit now removed the light blue nut. Returning, he touched the green, then the lilac, then the black; after going to ultramarine blue and pecking that he returned to the black kernel which he also pecked, then flew off with the lilac kernel. Green the Great Tit took next and on his return he carried off the ultramarine blue nut and after that the black. The green-painted soap which had been ignored was now removed.

The second set of painted kernels for Test V. was arranged

in two concentric circles with the green-painted soap in the centre.

As before, a Blue Tit took the natural unpainted kernel without any hesitation from the inner ring ; to get it he had to pass several others. He returned and pecked the green nut, picked up the unpainted soap kernel, dropped it and took the white kernel, all these being in the outer circle. Coming back, the Blue Tit bit a piece out of the soap, wiped his beak on the ground and flew off. The Great Tit now came, pecked the soap nut, then took the pink kernel, both being in the outer circle. Returning, he carried off the purple nut from the outer circle. The Blue Tit arriving pecked the green soap in the centre of the circles, then the uncoloured soap and the black kernel, both these being in the outer circle. The Great Tit now carried off the light blue kernel from the outer circle. The Blue Tit, on coming back, pecked the ultramarine blue and the soap kernel and carried off the lilac kernel from the inner circle. The Great Tit now picked up the green soap but dropped it and flew. The Nuthatch coming picked up the prussian blue kernel, the green soap and the green nut, dropping each in turn. Now the Blue Tit took the green kernel. He returned and took the ultramarine blue after which the Great Tit carried off the red kernel. On returning he picked up the prussian blue, dropped it, took the orange nut and, on coming back, removed the uncoloured soap. Whether he ate this dainty I could not see, but, returning, he took the prussian blue and afterwards the black kernel. The green soap was not in favour but was removed some time after by the Great Tit.

The next tests were of a different nature. Having ascertained the complementary colour of the hue of the natural pea-nut pods I painted half a dozen pods with this colour, which is almost a Cambridge blue. This was done in order to obtain the greatest possible contrast to the colour of the natural pods, the tone being the same. For Test VI. these painted pods were arranged in a circle on the ground alternately with six natural pods to give the birds an equal choice of coloured or natural pods.

The Nuthatch came first and took a natural pod. The Great Tit coming next also removed a natural pod. On his return he pecked one natural pod and took away another. The Nuthatch now came and having looked at the array went without taking any. The Great Tit, coming back, pecked first a blue pod, next a natural one, then flew off with a blue pod. Following this the Great Tit pecked a blue pod,

then a natural, then took another natural pod. Returning, he pecked a natural, next another natural, then a blue one, flying off without taking any. Coming back, he first pecked a blue pod, then carried off a natural one. The Nuthatch now came and took the remaining natural pod.

Five blue pods were thus left. To these I added five natural pods and for Test VII. placed them in a ring as before, alternately.

This time the Great Tit took a natural pod, followed by the Nuthatch, which did the same. The Great Tit now pecked two natural pods, taking none, after which the Nuthatch paid three successive visits, removing a natural pod each time.

A similar experiment, Test VIII., was now made with this difference. Six pods were again coloured with the complementary hue but, instead of making it the same in tone as the natural nuts as in the last test, the colour was mixed to the extreme opposite tone, i.e., dark, thus giving the greatest possible difference of tone as well as colour. The pods were placed in a ring alternating with six natural pods.

The Nuthatch pecked one natural and took another natural pod. The Great Tit touched a natural pod and removed another natural one. Returning, he took another natural. The next time he came back he pecked a natural but carried off a blue pod. After that he removed a natural pod. Following which the Nuthatch paid two visits, taking each time, without hesitation, a natural pod.

I had now five of the light blue pods and five of the dark blue left over from these tests. My last experiment, Test IX., with peanut pods was made by arranging these two tones of blue alternately in a circle.

A Great Tit came and took a light blue pod. On his return he took another light blue. Next time he came he picked up a dark blue nut, but dropping it, carried off a light blue. The Nuthatch now arrived, walked two-thirds round the circle looking at the pods, but did not touch any. After absenting himself for a while he returned, touched the nearest dark blue, walked half round the circle, then flew. The Great Tit now came, pecked at each of the light blue pods, then a dark blue, and departed without one. Returning, he at once took a light blue pod. The next time he came he pecked a light blue, then carried off a dark blue pod. Again returning, he took a dark blue, came back and removed the last of the light blue pods and followed this by fetching a dark blue. The Nuthatch now came and took a dark blue, and the last pod, a dark blue, was fetched by the Great Tit.

Hazel-nuts, being part of the normal food of Nuthatches, I took a number and painted them for Test X. as follows: white, yellow, light blue, green, red, ultramarine blue, prussian blue, purple and black. These were spread out on the ground. The Nuthatch, after touching several with his beak and seeming to have satisfied himself that they were all right, quickly carried them off in this order: black, purple, red, green, ultramarine blue, yellow, light blue, white, prussian blue.

The shapes of pods and nuts were, of course, quite familiar to the birds and may be presumed to have decided them that the baits, though strangely coloured, were yet their familiar food. Test XI. was tried relative to the shapes. A monstrous hazel-nut was constructed by sticking together half hazel-nut shells till the mass was larger than an egg. Again, three natural peanut pods were glued together into a bundle.

The Nuthatch at once seized the monster nut and carried it a distance of several yards and there left it. The bundle of pods he pecked several times, then abandoned it.

Again, thinking the rattle of the kernel in the shell might be an aid to identification I opened, Test XII., two peanut pods, and after extracting the kernels filled the space tightly with bread and neatly closed the pods. They were now the same weight as in the natural pod but there was no rattle. Taking a hazel-nut I halved it and, substituting carbolic soap for the kernel, joined the halves again. I imitated a pea-nut kernel in carbolic soap of the same colour as the natural kernel.

The Nuthatch immediately broke open and ate the bread from one of the pods, then started to break open the other, but carried it off to eat in private. One tap at the doctored hazel-nut was enough to tell him that the contents were uneatable. How this did so I could not tell as he did not crack or pierce the shell. The imitation soap kernel he treated with contempt.

In Tests I. and II. the Nuthatch took, first of all, pods which were similar in tone to the natural pods, i.e., the light colours, and his first preference was, in both tests, for the orange-coloured pod, which was the nearest of them all to nature. This he followed with green, natural, pink, white and light blue. A curious contradiction was the choice of dark blue in each test among the light colours. In Test III. he again began with the light colours. In Tests VI., VII. and VIII. he ignored the coloured pods, though they were the same

in tone as the natural ones, and took the latter each time. In Text IX., being restricted in choice to a light colour and a dark, he, with one hesitation, always took the light colour.

It is not clear from this that the Nuthatch could distinguish between a natural pod and coloured pods of the same tone as the natural one. But it seems certain that the pods coloured with dark tones were not so attractive as the light ones. Also it was evident that colours having a preponderance of yellow, and in this resembling the natural pod, received early attention.

In the hazel-nut experiment, Test X., the same thing happened: the Nuthatch began by taking colours which were dark in tone and also having a preponderance of red, both of which are characteristic of the natural hazel-nut. Here again it may be noticed that he took a dark blue in the midst of the light colours.

On the evidence one may say, I think, that the Nuthatch was influenced rather more by the tone of the colour than by the colour itself, though the kind of colour also had weight; that is to say his preference was for warm colours rather than cold hues.

It was interesting to observe that in the extracted kernel experiments, Tests IV. and V., the Nuthatch was frankly puzzled, as shown by his examination of the kernels and his decision not to eat any of them. He was familiar with edible nuts disguised in various colours and colours of different tones, so that it could not have been those features which deterred him. Can it be that the shape, unfamiliar to him in nature, prevented him?

No method can be traced in the order of choice of the Tits, for, with the exception of the Blue Tit which took the natural kernel first in each of the Tests IV. and V., they carried off the kernels (and the pods in Test III.) without reference to their tones or colours, to which they seemed indifferent. I would suggest that the explanation lies in the omnivorousness of the Tit family.

In Tests VI., VII. and VIII. with complementary colour, the Great Tit, with two exceptions, took the natural nut in preference to those coloured with the complementary hue.

In Test IX. he took the pods, with one exception, which, though painted with the complementary colour, were the same in tone to the natural pods, clearly showing that it had a perception of tones.

Finally, smell could not have helped the birds, for the paint used was ground in fish oil, the smell of which was far from resembling the odour of the natural pods or kernels, while the carbolic soap imitations were quite distinctive.

NOTES FROM RESERVOIRS AND SEWAGE FARMS.

PASSAGE ON A CHESHIRE SEWAGE-FARM IN THE AUTUMNS OF 1931 AND 1932.

BY

T. A. COWARD.

IN the late summers and autumns of 1931 and 1932 I visited the Altrincham U.D.C. sewage-farm at irregular intervals between the beginning of July and beginning of December. On many occasions I was accompanied by Mr. T. Baddeley, and Messrs. A. W. Boyd, A. G. Haworth and I. Whittaker supplied me with notes relating to their visits. These, with their permission, I have incorporated with mine.

The farm covers a large area of drained and cultivated moss-land, formerly part of the once extensive Carrington Moss. It is divided into small fields or "tanks," which are in rotation flooded, drained, ploughed and planted. Wading birds and Gulls move from tank to tank, according to the condition of the sludge; the tanks are evidently most productive when the water is sinking in or draining off after flooding. The food of the birds seems to be worms, dipterous larvæ and flies, and some crustaceans (*Daphnia*). The numbers of various species vary greatly according to the volume of passage, but except with a few noticeable birds it is difficult to say how long individuals remain on the farm.

Passerine birds visit the cultivated tanks, and at times large flocks are attracted to the big beds of seeding *Persicaria* and other weeds. No special note was kept of the fluctuations. Greenfinches (*Chloris chloris*) were in exceptionally large numbers on July 21st and September 30th, 1931. In 1931 Yellow and Pied Wagtails (*Motacilla rayi* and *yarrellii*) were plentiful about the middle of July, but in both years they were most abundant in the second and third weeks of August and early in September. Mr. Baddeley and I saw only one party of White Wagtails (*Motacilla alba*); about half-a-dozen were on one tank on August 24th, 1932. Grey Wagtails (*Motacilla cinerea*) are very infrequent visitors; two came in to roost on August 19th, 1931, and I saw four together on September 16th, 1932.

In both years a few odd Wheatears (*Enanthe cenanthe*) appeared in August, and on August 19th, 1931, there were numbers of Whinchats (*Saxicola rubetra*) on the cultivated fields.

Hirundines passed in varying numbers throughout the whole seasons; the most remarkable movements were of Sand-Martins (*Riparia riparia*) in the first and second weeks of September, 1932, after the birds had been in very small

numbers throughout August. On September 7th, when the Martins were most abundant, unusually large numbers came in to roost in the reeds on Knutsford Moor, about eight miles due south.

In 1931 Swifts (*Apus apus*) were passing throughout August, the last being noted on September 7th, but in 1932 the greatest rush was towards the end of July, and on the 19th and 20th the crowds above some of the tanks were enormous.

Ducks fly from the meres to feed at night, and a few may be seen by day, especially Mallard (*Anas platyrhynchos*) and Teal (*Anas crecca*) and more rarely Shovelers (*Spatula clypeata*). Mallards and Tufted Ducks (*Nyroca fuligula*) have nested on the farm, and perhaps other species. On November 2nd, 1932, Mr. Baddeley and I watched a Goldeneye (*Bucephala clangula*) diving repeatedly in the shallow water.

Snipe (*Capella gallinago*) were most numerous in 1931 about August 12th and October 12th to 14th, and in 1932 the peaks of abundance were much the same, and in the third week of September. The only Jack Snipe (*Lymnocryptes minimus*) seen was watched at close quarters by Mr. Baddeley and me on August 30th, 1932. It was feeding with two Common Snipe, one the grey phase and the other ruddy, and the disparity in size struck us long before we were able, under convenient cover, to get within a few yards of the unsuspecting birds.

From September 30th until October 23rd, 1931, a Little Stint (*Calidris minuta*) was with the Dunlins (*Calidris alpina*); none was seen in 1932. In 1931 the numbers of Dunlins present varied from about a score in the middle of July to over seventy on the 21st, after which they dropped steadily until the end of September, when there was a short increase, followed by a decline in October. On about the same date in July, 1932, the birds numbered about fifty, but after a decrease rose to well over a hundred on August 8th. There was a slight increase again at the beginning of November.

I saw no Curlew-Sandpipers (*Calidris testacea*) in 1932, but in 1931 four were present on August 27th, seven or eight a few days later, and the number rose to ten or more at the beginning of September. On July 15th, 1931, I saw a single early Sanderling (*Crocethia alba*).

In 1931 a Ruff (*Philomachus pugnax*) remained from about September 6th to 12th, and in 1932 the first appeared about July 15th and remained at least a week. Another was noticed on August 20th and on the 30th a Reeve. How many were seen and missed in September it is difficult to say, for on the 4th and 7th there was a Ruff and two Reeves, on the 16th one Ruff only was detected, but on the 17th, 21st and 27th a Ruff and Reeve.

In 1932 a single Black-tailed Godwit (*Limosa limosa*) was on the tanks from August 16th to 30th. Curlews (*Numenius arquata*) passed occasionally and more rarely alighted in August and September.

Redshanks (*Tringa totanus*) are present all the year round, but there are always marked fluctuations in numbers. Thus from 30-35 early in August, 1931, the number rose to well over a hundred at the end of the month, declined to about half that number on September 12th and rose again to over 100 on the 14th. In 1932 over 200 were present on July 19th, but after that the number fell, decreasing and increasing a little until the end of October.

In 1931 a Greenshank (*Tringa nebularia*) was noted on August 9th, and in 1932 one on August 16th and another on September 21st. Common Sandpipers (*T. hypoleucos*) are about the tanks in July and August, sometimes three or four, sometimes as many as a dozen at once. Green Sandpipers (*T. ochropus*) and Wood-Sandpipers (*T. glareola*) are usually present, the former more frequently, though it is not always easy to distinguish the birds when on the wing. In 1931 from one to six Greens were seen on various dates from July 21st to October 14th, six on August 9th and five on September 19th. In 1932 three was the largest number on any one day, but birds were noted on twelve dates between July 15th and September 21st. Woods were clearly identified on three dates in 1931 and six in 1932.

Ringed Plovers (*Charadrius hiaticula*), usually with Dunlins, were seen on ten visits in 1931 and fourteen in 1932, the numbers varying from single birds at the end of July and late September to fifteen on August 27th, 1931, and twenty-three on August 20th, 1932. Golden Plover (*C. apricarius*) came to the tanks three or four together on a few occasions, but Lapwings (*Vanellus vanellus*) were often in immense numbers. On August 18th and 19th, 1931, three Turnstones (*Arenaria interpres*) were on the farm, and one remained until the 23rd.

Gulls of three species come to the tanks, sometimes the Black-headed Gulls (*Larus ridibundus*) in exceptional numbers in August and September. On September 7th, 1932, a Black Tern (*Chlidonias niger*) was feeding over one or two tanks, on the 15th and 16th it was joined by another, and one remained until the 18th.

STAFFORDSHIRE RESERVOIRS.

By A. W. BOYD.

THE following notes from Staffordshire Reservoirs for the twelve months ending September, 1932, refer (except where otherwise stated) to the most westerly of the large reservoirs

in south Staffordshire, to which previous notes in recent years have referred.

In addition I include notes kindly sent me by Mr. H. G. Alexander, which cover the period from April, 1929, to September, 1932, and comprise records from Messrs. F. R. Barlow and J. D. Wood. Some of these notes confirmed within a few days occurrences already published in the three previous volumes of *British Birds* and to these I have not referred. I give the initials of the recorder and the year of each record, except of those records for which I am responsible.

WHITE WAGTAIL (*Motacilla a. alba*).—One seen on March 19th, 1932 (H.G.A.).

SHELD-DUCK (*Tadorna tadorna*).—One on December 7th, 1931 (F.R.B. and J.D.W.). On February 7th, 1931, I saw five at Gailey Pool and on the same day three others at Doddington Pool in S. Cheshire, two miles from the Staffs. border—two occurrences which possibly suggest a movement at this time of the year.

GADWALL (*Anas strepera*).—A pair on May 17th, 1930 (H.G.A.).

GARGANEY (*Anas querquedula*).—A drake on May 17th, 1930 (H.G.A.).

WIGEON (*Anas penelope*).—As before, Wigeon remained in considerable numbers till the spring of 1932; on March 28th there were still 150 present and I noticed a group of drakes swimming about in a close bunch with their tails held erect—evidently some form of display. On July 24th there was a drake on Copmere, further north in the county.

SHOVELER (*Spatula clypeata*).—Always present and much more plentiful than in the last few years, during which there had been a distinct falling off in the numbers of this species. H.G.A. reports about forty in April, 1931, and at the beginning of March, 1932, I noticed that they had increased to about forty from a dozen or so in early February; the forty included thirteen pairs in one spot. On March 28th I counted about fifty and watched a display in which drake and duck acted identically: they stretched their necks up straight and then bobbed their heads, bowing to one another—a display similar to that described by Millais in *British Surface-feeding Ducks*, but rather more emphatic.

POCHARD (*Nyroca f. ferina*).—Little in evidence during the summer of 1932 on the days when I visited the reservoirs (I saw two drakes on June 12th); but by July 24th there were more than twenty present and twenty-five on Copmere.

TUFTED DUCK (*Nyroca fuligula*).—Bred freely—one brood of twelve on July 24th. On September 12th I noted that

their numbers were definitely reduced, and on the previous day found that almost all Tufteds had left a S. Cheshire water where seven pairs had been seen with young some six weeks before. Is an extensive movement at this time of the year recognized?

GOLDENEYE (*Bucephala c. clangula*).—In small numbers till at least April 24th; not exceeding a dozen; not so plentiful as usual.

GOOSANDER (*Mergus m. merganser*).—The usual occurrences from December 7th (F.R.B. and J.D.W.) till March. The largest number seen together was eleven (including six adult drakes) on March 6th on Gailey Pool.

CORMORANT (*Phalacrocorax c. carbo*).—Several records: 1931.—January 1st, one on Gailey Pool; December 7th, three on Gailey Pool and two on the most westerly reservoir (F.E.B., J.D.W.). On March 28th, 1932, I saw four flying over at some height to the west. Cormorants are not often seen on these Staffs. reservoirs and yet on the Ellesmere group of meres in N. Shropshire—between 30 and 40 miles to the N.W.—they occur regularly and in considerable numbers, often on every mere in the group. For example, on March 13th on White Mere, one of the Ellesmere group, I counted 26 Cormorants, 16 or 18 of which were swimming in a close bunch.

RED-NECKED GREBE (*Podiceps griseigena*).—On December 7th, 1931, one at Gailey Pool (Mr. W. B. Alexander and J.D.W.).

OYSTER-CATCHER (*Hæmatopus ostralegus*).—On February 7th, 1932, I saw the first that I personally have seen in Staffs.

RINGED PLOVER (*Charadrius h. hiaticula*).—Further records: 1929.—April 6th (F.R.B. and J.D.W.); May 20th, four passing (H.G.A.). 1930.—May 17th, two passing (H.G.A.). 1932.—September 12th, one.

DUNLIN (*Calidris alpina*).—1932, one, March 19th; two, April 14th (H.G.A.).

WHIMBREL (*Numenius p. phæopus*).—On May 20th, 1929, heard passing (H.G.A.).

JACK SNIFE (*Lymnocyptes minimus*).—Two on Jan. 1st, 1932 (H.G.A.). I have never seen this species at the reservoir.

BLACK TERN (*Chlidonias n. niger*).—Two on September 12th, 1932, one of which showed a fair amount of black on the breast.

COMMON TERN (*Sterna h. hirundo*).—Seen on three dates in 1932: one on June 12th, one on July 24th and one on September 12th. That seen on July 24th was certainly a Common

Tern and the other two probably the same. H.G.A. saw an adult Common Tern on September 27th.

ARCTIC TERN (*Sterna macrura*).—On September 27th H.G.A. identified an immature Arctic Tern resting on the mud with an adult Common Tern—seeing it within a distance of six or eight yards.

BLACK-HEADED GULL (*Larus r. ridibundus*).—In small numbers throughout the year except that I saw none during a visit in June. Twenty-five at Gailey Pool on March 6th was the largest number seen together.

COMMON GULL (*Larus c. canus*).—One or two on March 29th, 1930 (F.R.B., J.D.W.).

LESSER BLACK-BACKED GULL (*Larus fuscus*).—On May 17th, 1930, two immature birds passing (H.G.A.). On April 24th, 1932, seven adults passing.

COOT (*Fulica a. atra*).—There is evidence of considerable movement at times. The bird breeds freely and I counted more than 70 on the water on June 12th; but, whereas on February 7th there were few on the reservoir, on March 6th I saw three close groups of 150, 50 and 30; and on September 12th counted 150 on Cannock Chase Reservoir, a bare pool which lacks suitable breeding sites, and almost 100 on Gailey Pool on the same day.

NORTH WORCESTERSHIRE RESERVOIRS, 1932.

BY H. G. ALEXANDER.

A NUMBER of observers have visited the Upper and Lower Bittell reservoirs during the past year, and have contributed to the following records. The most notable feature of the year has been the exceptional number of Terns that have been seen at the reservoirs during the autumn. Mr. E. St. G. Betts, whose visits have been most frequent, tells me that between June 28th and October 16th he observed Terns on twelve separate occasions, but unfortunately not all of them could be identified. The total number seen must be nearly twenty. A Sandwich Tern (*Sterna sandvicensis*) was identified on July 25th, an Arctic Tern (*S. macrura*) on September 3rd, single Black Terns (*Chlidonias niger*) were present on September 19th and October 10th and 12th, and a Common Tern (*S. hirundo*) was present each day from September 23rd to September 27th and on the 29th; and a second bird of the same species was with it on the 26th, and was seen to leave in a south-easterly direction. A Tern, probably Common, was present as late as October 15th.

Although there has been more mud than for several years past during the autumn, surprisingly few waders have been

seen. Single Green Sandpipers (*Tringa ochropus*) were present on August 20th, September 9th, 10th and 14th; single Dunlins (*Calidris alpina*) appeared from time to time from September 9th, twice there were two together, and on December 10th there were six. To the best of my knowledge, this is the first record of Dunlins at these reservoirs in December.

The passage of Common Sandpipers (*T. hypoleucos*) was considerable and unusually prolonged, the last being seen on October 8th. The only two unusual waders have been seen by Miss C. James: a Whimbrel (*Numenius phaeopus*) on March 6th, and a Grey Plover (*Squatarola squatarola*) on November 7th. Single Curlews, Redshank and Golden Plover have been noted, and a probable Greenshank, but no Ringed Plovers.

A Kittiwake (*Rissa tridactyla*) was swimming on the Upper Bittell reservoir on February 6th, and flying at ease over the water. The weather was dull and not very cold; there had been no high winds for over a fortnight. On November 6th, in the late afternoon, six immature Common Gulls (*Larus canus*) flew over the reservoirs in an easterly direction; and on November 26th seven, also immature, were seen to fly over to the north-west. The species is not at all commonly seen in the district, though it appears from time to time on migration. Probably its nearest winter haunts, in Gloucestershire, are fifty miles away.

The Great Northern Diver (*Colymbus immer*) that was present in the middle of January has already been recorded by Mr. Betts. Two Cormorants (*Phalacrocorax carbo*) were also present on January 18th.

Of ducks, a pair of Garganey (*Anas querquedula*) were seen between November 26th and April 15th; a Golden-eye (*Bucephala clangula*) was seen as late as May 7th, and the first autumn appearance (three immature birds) was on October 19th, rather an early date. The first Wigeon (*A. penelope*) on October 7th was also unusually early. Single Scoters (*Oidemia nigra*) were seen on October 19th and November 19th.

A single Swift (*Apus apus*) was present with Hirundines on September 5th. This is the first September record I know of in the district. White Wagtails (*Motacilla a. alba*) were observed by the Upper Bittell reservoir on April 9th, 22nd and 23rd. A black-legged *Phylloscopus*, making the distinctive call-note which I believe to be characteristic of *Ph. collybita abietinus*, was observed in a bush by the Upper Bittell reservoir on September 23rd.

NOTES

RARE BIRDS IN LINCOLNSHIRE.

ROSE-COLOURED STARLING (*Pastor roseus*).—On September 10th, 1932, a Rose-coloured Starling was seen by Mr. J. H. Stubbs in a grass field close to the village of North Cotes with a small flock of Starlings. He saw it at a very short distance and his description was so good that there can scarcely be any mistake. There was a fresh S.W. wind and showery weather.

EVERSMANN'S WARBLER (*Phylloscopus b. borealis*).—While hunting the old shelter hedges near the coast at North Cotes for Woodcock on October 24th, 1932, I detected a small leaf Warbler flying along in front of the beater and keeping close to the foot of the hedge. As this date was late for a Chiffchaff or Willow-Wren, I paid special attention to the bird and soon noticed that it had a conspicuous white eye-stripe. I shot the bird, which was unfortunately much shattered, but Gunn of Norwich contrived to make a recognizable skin of it. It was forwarded to Mr. H. F. Witherby, who very kindly identified it for me as Eversmann's Warbler. It is the first Lincolnshire and the eleventh British example. There was a certain amount of migration taking place, Hooded Crows, Rooks, Fieldfares, Larks and Lapwings travelling to N.W., and I noticed Great Tits, Wrens and Tree-Sparrows in the hedges. The wind was light N.W. and the weather fine.

YELLOW-BROWED WARBLER (*Phylloscopus h. præmium*).—On October 12th, 1932, I obtained an example of the Yellow-browed Warbler at North Cotes. It was in a thorn hedge close to the sea-shore. It was a rather dull-coloured bird, with little trace of the pale stripe on the crown and the eye-stripes less yellow than usual. There was practically no migration in progress, the only other migratory birds seen were a few Rock-Pipits and a single Redstart, while a few Geese, Lapwings and Golden Plovers were passing over to N.W. The wind was light S.W. and the weather fine. This is, I believe, the twelfth Lincolnshire example. G. H. C. HAIGH.

SOME RESULTS OF RINGING AND TRAPPING SWALLOWS IN CARMARTHENSHIRE.

In *British Birds*, Vol. XXIV., p. 128, I gave some notes relative to ringing pairs of Swallows (*Hirundo r. rustica*) in 1929, and re-trapping their sheds in 1930; the result was to show that one bird (out of twelve) returned to the same nest, while another nested in an adjoining shed.

Out of nine pairs ringed in August, 1930, not a single bird turned up in August, 1931. In fact, seven of the sheds were not occupied (but see below).

Now we come to the following year, which was more productive; fourteen pairs were ringed in August, 1931, and here are the results of re-trapping their sheds in August, 1932:—

Sheds 1-7.—No birds nesting.

Sheds 8 and 9.—Different pairs.

Sheds 10 and 11.—One bird of each pair different, the other not caught.

Shed 12.—Same female, different male.

Shed 13.—Same female, male not caught.

Shed 14.—Same pair.

This last one is exceedingly interesting, as I believe there is no previous record of a pair of Swallows being ringed together and recovered together in a following year.

Going back to sheds where pairs were ringed in 1930:—

Sheds X and Y.	{	In 1931. None nesting in August.
		In 1932. Same males, different females
		(one of the pairs in another shed of the same farm).

The following figures from 1927, when I first started to catch adult Swallows, will give an idea of what percentage of recoveries one is likely to make by re-trapping:—

Year.	Nestlings Ringed.	Adults Caught.	Ringed Adults Caught.	Per cent.
1927	153	3	0	—
1928	104	8	2	25
1929	164	17	3	17.7
1930	142	24	4	16.7
1931	181	43	5	11.6
1932	194	56	9	16.1

These figures seem to suggest that one can make one recovery out of every seven or eight adults caught. Probably this percentage could be increased by trapping in June and July as well as in August. (The area worked, in my case, is about 15 square miles.)

The somewhat widespread opinion that the young birds return the following year and take their parents' nests, if the latter are no longer alive, is not in the least borne out by ringing Swallows. It will be seen above that during the five years 1927-1931, 744 nestlings were marked, but out of the 148 adults that were trapped from 1928-32 only three were found to have been ringed as young birds, and the nearest of these was half a mile from its birthplace.

To sum up the results from Swallows marked by myself up to the end of 1932 :—

Adults returned to the same sheds the next year and/or a later year (sixteen recoveries, including repeats). Three others came back to the same farm, but nested in different sheds, while a fourth moved a distance of half a mile (its former shed was occupied by another pair).

Nestlings return to the same district, but probably spread out very much further than adults—half a mile to thirteen miles (nine recoveries).

J. F. THOMAS.

NOTES ON THE SWALLOW AND SIZE OF BROODS IN CHESHIRE.

DURING the summer of 1932 I paid particular attention to the Swallow (*Hirundo h. rustica*) population of several townships in the neighbourhood of Great Budworth, Cheshire, and attempted to make a fairly careful survey of certain limited areas and to discover the density of breeding pairs therein.

The two townships most thoroughly surveyed are entirely rural, consisting of many small arable farms with a considerable amount of meadow-land; the acreage of the two combined is about 2,700 acres. I estimated the number of pairs of Swallows in this area to be about 112 or one pair to about 24 acres. In the smaller township farm-houses are not far apart and the average worked out at one pair to 20 acres; the other and larger township includes one large stretch of meadows without buildings and in that the average was one pair to 26 acres.

Practically every farm has at least one pair of Swallows and seldom less than two pairs and, though the farmsteads are small—just a house with outbuildings—two of them held seven pairs apiece.

It is obvious that in a country of farms of larger acreage and more widely spaced farm-houses the distribution of Swallows will be different and probably they will be less plentiful; the bigger ranges of buildings doubtless can house more pairs each, but every small farm contains cattle, pigs, etc., and the birds are associated with animals to a greater degree than casual observation might lead one to think. Their favourite nesting-sites are in stables, in shippons with the cattle, in pig-cotes and to a lesser degree in fowl-houses, and if the animals are removed the number of nesting pairs is very quickly reduced. Their attachment to mankind alone is not nearly so well defined, though there are often one or two pairs where no animals are kept.

In 1932 each pair, almost without exception, had two broods, but I knew only one definite case of a third brood in

the district. For the second brood the same nest is often used, but frequently enough a new one is built—the choice seems to be quite arbitrary.

In addition to those built in the usual nesting-sites, I saw two in unusual positions : —

A stick had been thrust into a gap in a wall and projected about two feet into a room ; a Swallow built its nest on the end of the stick (which is bent like the handle of a walking stick) and safely reared its young, though the stick vibrated violently every time the old bird left the nest.

Another pair built their nest on the top of a Song-Thrush's nest from which the young had flown, a nest which itself had been built on an old Swallow's nest of the year before on a small ledge.

Five birds ringed in 1931 were recaptured in the district in 1932. Of these, three were marked as adults and all three were found in the same farm as before—two in exactly the same place (one at the same nest) and the third in the next pig-cote, a few feet away ; it is interesting to note that the cote in which it had nested in 1931 was occupied this year by another pair of birds. The other two were marked as nestlings : one was found $1\frac{1}{4}$ miles to the north and the other caught in a house within 100 yards of its original nest.

The tendency of the young on their first return to scatter in the area in which they were born was shown in 1930 (*antea*, XXIV., pp. 160-1) and one of these records confirms this.

The following table gives the size of broods in 1932 :

Month.	Broods examined and ringed.	Broods of					Total Average	
		1	2	3	4	5	Average No. of Broods.	for the Year.
June	41	1	—	8	11	17	4 4.34	} 103 } 4.01
July	25	1	1	3	11	9	— 4.04	
August	34	2	2	6	18	6	— 3.7	
September	3	—	1	1	1	—	— 3.0	
Total	103	4	4	18	41	32	4	

The average brood is slightly greater than in 1931, and, as in each of the five previous years, the first brood is larger than the second or later broods.

A. W. BOYD.

SIZE OF CLUTCHES AND BROODS OF SWALLOW IN YORKSHIRE IN 1932.

DURING the spring and summer of 1932 the following figures were obtained—mostly in the immediate neighbourhood of Jixby Park, near Huddersfield.

1st Broods.—Nine nests, eight with five eggs, one with four, average 4.88, infertile eggs 6.8 per cent., average size of broods 4.55.

2nd Broods.—Eight nests, four with five eggs, two with four eggs and two with three eggs, average 4.25, infertile eggs 5.8 per cent., average size of broods 4.00.

In one case of a second brood, when visited towards the end of August, the nest (which originally had five eggs) was found to contain three young Swallows—two infertile eggs and one perfectly fresh egg.

J. C. S. ELLIS.

PINE-CONE DIET OF GREAT SPOTTED WOODPECKER.

I FIND that the Great Spotted Woodpecker (*Dryobates m. anglicus*) starts working the green pine-cones at about the end of the third week in July, and continues feeding on the seeds until the end of the following April. This year they started feeding on green cones on July 23rd, three days after the squirrels and at about the same time as the Crossbills. I have four separate birds under observation and they appear to be keeping roughly to their breeding territories. They all started on the green cones about the same time. The male Great Spotted Woodpecker, which has his territory in my wood, has consumed from August 13th, when I first started taking count, until October 30th, 3,021 cones, or an average of just over 38 a day. It works these cones at thirty-two different places, twenty-seven in my wood and five just over my borders. Besides these places I have heard it working at five other places which up to now I have been unable to find. At the commencement the number consumed was rather irregular, some days as many as 74, and once only 15. Now it seems to have settled down to a regular 40 a day. More than half of the feeding places have been in use for eight years, perhaps longer. The bird has four or five favourite feeding places, the rest are only used occasionally. For the last two months I have not known it to attack anything else except oak-root galls, which it splits open *in situ* for the grubs contained therein.

I have spent many hours watching all three kinds of British Woodpeckers but have never yet seen them either drink or bathe, though the latter has been recorded. In the case of the Green and Lesser Spotted Woodpeckers, which seem to feed mainly upon insects, one could understand that they would seldom want to drink, but with the Great Spotted Woodpecker, which feeds largely on pine seeds for nine months in the year, one would expect the bird to drink fairly frequently. If one may judge by the frequency with which

the Crossbill drinks, this pine-seed diet must be very thirst producing.
N. TRACY.

LONG-TAILED DUCKS IN MIDDLESEX.

I AM told that the Long-tailed Duck has, so far, not been recorded in Middlesex. On November 11th, 1932, I saw a Long-tailed Duck (*Clangula hyemalis*) at the Stanwell reservoir, near Staines, and it was seen on the following day by two people. On the 16th at the same place I found two. On the 18th Mr. A. H. Macpherson saw four, and the same number were watched on November 20th by several observers.

Since that date two, but I believe not more than two, have been seen on several occasions; the last known to me was on December 14th.
DONALD GUNN.

LONG-TAILED DUCK AND COMMON TERN IN ESSEX.

ON December 9th, 1932, on one of the reservoirs near Walthamstow, on the Essex side of the River Lea, we found a Long-tailed Duck (*Clangula hyemalis*). This is the first occasion upon which this species has been recorded from these waters. This bird was not one of the Long-tailed Ducks which have for some weeks recently been seen at the Staines reservoirs, for the white on its face and neck was purer and more clearly defined, and its tail was short and up-turned; whereas the birds at Staines, which are no doubt young, have their rectrices so short that they appear to possess no tails.

On the same day we saw a Common Tern (*Sterna hirundo*) flying over an adjoining reservoir. It was an adult bird and in good condition, apart from the fact that some of its central tail-feathers were imperfect. We do not know of any previous occurrence of the Common Tern in December in the neighbourhood of London.
J. P. HARDIMAN.

A. HOLTE MACPHERSON.

GREY PLOVERS IN SURREY.

ON November 23rd, 1932, at the Barnes Reservoirs, near Hammersmith Bridge, I was startled by the call of a Grey Plover (*Squatarola s. squatarola*) just behind me. Before I could turn round two of these birds flew by at a distance of about fifteen yards and at a height of three or four feet from the ground. They did not alight, and appeared to be young birds. The dark axillaries were, of course, very conspicuous, and some yellow spots were visible on the upper parts of the nearer one. I believe this makes an addition to the long list of species known to have visited this group of reservoirs, while definite records of the occurrence of the Grey Plover in Surrey are very scarce.
A. HOLTE MACPHERSON.

PUFFINS IN MIDDLESEX AND INLAND IN HAMPSHIRE.

THE Zoological Society has recently received three specimens of the Puffin (*Fratercula arctica*) under somewhat strange circumstances. The first was discovered on the morning of October 20th, 1932, wandering about in a garden in Hampstead. The second was found on December 8th in Finsbury Circus Gardens. It was captured by the attendant and kept for a week in a garden frame and fed on small pieces of fish. The third came from Swanmore, Hants., on December 12th, having been captured a day or two previously. The first of these died a few days after it was received and showed signs of having been injured, apparently by hitting a telegraph wire. The other two seem to be doing well. All three appear to be birds of the year.

D. SETH-SMITH.

IMMIGRATION OF WAXWINGS.—We have received several notes of the appearance of Waxwings (*Bombycilla garrulus*), and although the numbers do not appear to be so great as in the immigration last year (see Vol. XXV.), the occurrences should be recorded, and we shall be glad to receive reports on the subject. Readers are especially requested to give numbers, dates and localities.

Inverness-shire.—Mr. W. Marshall informs us that a reliable observer, who knew the birds from previous visits, saw seven at Nethy Bridge on November 16th, 1932.

Northumberland.—Mr. M. C. Tate informs us that he saw a Waxwing at Alnmouth on November 4th, 1932.

Durham.—Mr. J. Bishop reports considerable numbers seen this autumn in the Stockton-on-Tees district. One was picked up dead on November 7th, 1932.

Yorkshire.—Mr. W. S. Medlicott writes that the Rev. M. Horsfall saw a single Waxwing feeding on elderberry at Whitby on November 10th, 1932, and that another was reported near Bridlington at the beginning of the month.

Lancashire.—Mr. T. Baddeley informs us that a single Waxwing frequented a public park in Salford for several days early in November, 1932, and fed largely on haws, but also took a few privet berries.

Norfolk.—Mr. J. Vincent tells us of one at Hickling on November 14th, 1932.

TURTLE-DOVE USING OLD NEST OF BLACKBIRD.—Miss J. M. Ferrier informs us that on August 14th, 1932, she found in Norfolk a Turtle-Dove (*Streptopelia t. turtur*) using an old Blackbird's nest. The bird had filled the cup of the old nest with pine needles and fine twigs, so that it formed a flat solid platform, and was sitting on two eggs, which were duly hatched off. We have previous records of Turtle-Doves using a Rook's nest, a squirrel's drey and an accumulation of rubbish.

REVIEWS.

The Trail that is always New. By Willoughby P. Lowe. (Gurney & Jackson). Illustrated. 16s. net.

MR. WILLOUGHBY LOWE is a born naturalist and has been a collector since early youth. He has been fortunate in being able to follow his bent, and has for many years accompanied expeditions as collector, chiefly of birds and mammals, for the British Museum. In this he has been eminently successful, and no climate or difficulty seem bad enough to prevent him from adding time after time most valuable material to our National collections.

This entertaining record of some of his journeys takes us to many parts of Africa, as well as to the Philippines and Siam, while an interesting first chapter recounts early days on a ranch in Colorado, where collecting and observation were by no means neglected.

Although Mr. Lowe disclaims any literary gift he writes simply and describes well, and his narrative has plenty of incident and varied interest. It thus makes a good travel book, and has a special appeal to naturalists by reason of its frequent allusions to birds and animals, many of the observations being of great interest.

The book is dedicated to the author's son, who was accidentally drowned in his 21st year. He, too, was a naturalist, and that by his sad death we have lost a bird artist of considerable merit is evidenced by his excellent drawings reproduced in this volume. Besides these and some drawings by Mr. Grönvold, the book is well illustrated with photographs.

The Nightingale: Its Story and Song, and other Familiar Song-Birds of Britain. By Oliver G. Pike. Illustrated. (Arrowsmith). 10s. 6d. net.

IN this book Mr. Pike writes an excellent chapter on the habits of the Nightingale as observed by him and this is illustrated by some really beautiful photographs, those of display attitudes being especially interesting. For the rest the book consists of short essays on some twenty-six species. Mr. Pike is not only an excellent photographer, but he is observant, and knows how to treat his subject in a popular style, his more serious observations being relieved here and there by light anecdotes. He has thus been able to produce an attractive and informative book about the particular birds he has somewhat arbitrarily chosen as familiar song-birds. These include the common warblers, Sky-Lark and Wood-Lark, thrushes, Wren, Robin, Dipper, some finches, buntings, tits and pipits. Readers of Mr. Pike's book will certainly learn a good deal about these birds from his observations and photographs.

LETTER.

BIRDS IN CAMBRIDGESHIRE.

To the Editors of BRITISH BIRDS.

SIRS,—The Cambridge Bird Club is endeavouring to collect all material relating to birds in Cambridgeshire, and it is hoped eventually to produce a county list. I should be extremely grateful if observers who can give me any information, on both common and rarer species, would communicate with me. There must be many ornithologists who have resided in Cambridge for at least a short period. Data for all years, and however brief, are of interest.

DAVID LACK.

MAGDALENE COLLEGE,
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SOME NESTING-HABITS OF THE KINGFISHER.

BY

B. B. RIVIÈRE, F.R.C.S., M.B.O.U.

(Plate 2.)

SOME fifty yards up a secluded dyke off the river Bure, and in close proximity to a small private Broad, a pair of Kingfishers (*Alcedo a. ispida*) have for the past four or five years made their home in a bank formed by the up-turned roots of a fallen tree, torn away from the dyke side.

A perfect ready-made hide in the shape of a clump of bamboos on the other side of the dyke, exactly opposite the nest, offered an opportunity for studying Kingfishers at close quarters which seemed too good to be missed, and I determined to make as full use of it as possible during the nesting season of 1932.

From the time when I began my observations until, as will be related later, disaster befell the baby Kingfishers, I was able to spend an hour or two in the hide almost daily. Of the diary thus kept, in which everything seen was noted, the following is a summary, confined through limitation of space to those points which I think are of most interest.

The weather of April and May, with its constant rain and frequent gales, added to the swarm of mosquitoes which haunted the dyke, made watching difficult and often unpleasant. Directly the birds appeared all thought of discomfort was instantly banished by the shock of their extraordinary beauty, seen thus at close quarters, and the fascination of observing their behaviour when wholly unconscious of human presence.

When I first came to live near these Kingfishers in February, I examined the bank and made a careful note of the number and position of the old nesting holes, so that I should be able to spot a new one directly this was started. After that I looked at it from time to time, but even so I was nearly caught out by the unexpectedly early date on which the birds commenced operations. I had not visited the bank for perhaps a week or ten days when, on March 19th, I was surprised to find that a new hole had already been dug, beneath which on the mud margin of the dyke lay a pile of freshly excavated earth.

On entering the hide the same afternoon I saw a shower of earth flying out of the hole, such as one sees when a terrier is digging out a rabbit, and shortly afterwards a Kingfisher emerged head first and flew on to a spray of bog-myrtle beside the bank.

When I became better acquainted with them I had no difficulty in recognizing the male and female of this pair.



Kingfisher with fish for its young. Note position of fish with head pointing forwards.

(Photographed by Miss E. L. Turner.)



Even when seen singly, the purer blue wing-coverts, brighter turquoise back, deeper chestnut underparts, and generally smarter, slimmer appearance of the cock served readily to distinguish him from his duller, paler, and more "bunchy" looking wife.

At first, however, I could not tell them apart, and for this reason I am unable to say for certain whether both took part in the excavation of the hole. I am under the impression that this was the case. Both certainly entered the hole while tunnelling was in progress, though I did not actually see both throw out earth. But on one occasion, after the bird which had been digging had vacated the hole, the other entered and after remaining inside for perhaps half a minute, came out with a small stone in its bill, which it dropped into the water.

Tunnelling was continued on March 20th and 21st, when the hole appeared to be completed, and from that day until the 27th neither bird was seen to enter it.

Both constantly visited the bank, however, two favourite perches—a stake and a dead branch of bog-myrtle—being almost invariably made use of, and the longest time I ever had to wait before one or both arrived was half an hour.

They were never seen after sunset, and where they roosted I do not know.

On arriving at the bank, either singly or together, they almost always called. The three notes most commonly used by both male and female I should describe—though inadequately—as "*Tee*," "*Tiptee*" and "*Tip*" or "*Chip*." The first is usually a single note, while the last two are generally repeated, and sometimes all three are uttered in the order given.

When calling to each other, which they constantly did when together, the cock usually called "*Tee*," and the hen "*Tip*." Another combination of notes, which appeared to be the equivalent of a song, I heard uttered by the cock upon one occasion only, when he was evidently highly excited sexually. The hen was sitting on the usual spray of bog-myrtle, while the cock flashed up and down the dyke, passing and repassing her, a wonderful sight to see, uttering all the while a string of notes suggesting : "*Tee titi titi titi*," rapidly repeated.

A characteristic movement of the Kingfisher, from which it appears to be never wholly free, except perhaps when asleep, is the up and down bob of the head, accompanied by a vertical flick of the tail, the two movements being synchronous. This is most noticeable when the Kingfisher is excited or suspicious

of danger, but it persists, though in less degree and at longer intervals, when the bird is at rest and even apparently dozing on some perch.

I first saw the male bring a fish to the bank and give it to the female on April 4th. After this he was seen to feed her frequently up till May 1st, but not after that date (sitting, according to my calculations, began on May 3rd or 4th). Fish seemed pretty easy to procure, and I once saw him bring three in five minutes, the first two of which he gave to his mate, while the third he swallowed himself.

Most of the fish brought appeared to be small rudd or roach, and some were sufficiently large to cause some difficulty in swallowing. Sometimes a fish was brought to the bank, evidently just caught, and held crosswise, and in this case the bird would go through the most violent contortions, swinging and jerking its head from side to side, in order to get it into the right position for swallowing, *i.e.*, longwise, with the head pointing towards the gullet. The cock always carried fish to the hen held in this position, and if she was away he would sometimes sit holding it thus for five or ten minutes, occasionally calling her, before giving it up as a bad job and swallowing it himself. When presenting it to her he would shift it crosswise in his bill, so that she could more easily take it from him. After swallowing a fish the bird would very often plunge at least once into the dyke, presumably to clean its bill. Both birds bathed frequently, and it would be difficult to imagine a more attractive sight than this Kingfisher's bath, when seen in bright sunshine, with the bird's wonderful colouring reflected in the water.

The procedure adopted by this pair was to jump in and out of the water four or five times from a low branch about two feet above the dyke, the usual "bathing movements"—preening and shuffling the wings—being performed meanwhile, and finishing up with a complete toilet of the whole plumage.

Pairing was seen on April 17th, 25th, 28th and 29th. On two occasions the cock flew up from the branch on which the hen was sitting and hovered over her before alighting on her back; on the other two he descended from a branch above her. In each case during the act he held her firmly with his bill by the feathers at the nape of the neck, and after its completion flew away. Two abortive attempts at pairing which were repulsed by the hen were also seen.

After the new nesting hole was completed on March 21st, neither bird, as already stated, was seen to use it until the 27th. On this day both were seen to enter it, and one



Kingfisher about to enter nesting-hole to feed young. The fish is carried with its head pointing forwards.
(Photographed by Miss E. L. Turner).

remained inside for nearly half an hour. After that they again left it alone, and on April 14th the cock was seen going in and out of an old hole in another part of the bank. He continued to do this for the next few days and was evidently trying to persuade his wife to consider its attractions. If he arrived at the bank first, as soon as the hen appeared he would call excitedly and fly into the hole, and then poke his head out and regard her with a sort of "Look what I've found" expression. On the 19th they were both back at the new hole, the female staying inside for fifteen minutes and the male for five minutes. On the 20th and 21st, however, the male appeared to have again convinced himself of the superiority of the old one, and was doing his best to induce the female to adopt it. She held out a little longer, visiting the new hole for a quarter of an hour on the 23rd, but this was the last time she was seen to enter it, and on the 27th she was using that of her mate's choosing.

During the next few days both birds were in and out of this hole constantly, the cock staying inside for periods up to a quarter of an hour, and the hen, as she laid, for longer and longer periods (April 30th, 20 minutes; May 1st, 30 minutes; May 2nd, 45 minutes).

In order to discover the Kingfisher's incubation-period, hitherto I believe unknown, it was essential to find out on what day the birds began to sit. I was able to narrow this down to one of two days, but unfortunately not to one day.

As the hen was never seen to enter the hole in which she laid until April 27th, the earliest possible date on which a normal clutch of seven eggs could have been completed was May 3rd, or in the case of a clutch of six, which is occasionally but much more rarely found, May 2nd. Now on May 2nd the hen left the nesting-hole—after being inside for forty-five minutes—at 7.30 p.m., and had not returned by dark, so that it is, I think, certain she had not begun to sit on that day. On May 3rd I was unable to watch until 7 p.m., but I then stayed in the hide until nearly dark. At 7.25 the cock arrived at the bank and settled on the stake below the hole, where he remained for a few minutes looking up at it. He then flew off, but soon returned to the same perch and again looked up at the hole before leaving for good. The hen never appeared, and may or may not have been inside the hole. From the behaviour of the cock I am inclined to think that she was.

The next day, May 4th, the birds were certainly sitting; either my wife or I were in the hide from 9.30-10.30 a.m., from 11.30 a.m.-12.30 p.m., and from 6.30 p.m. till dark.

From 9.30-10.30 a.m. neither bird was seen. At 11.45 a.m. one left the hole and flew towards the Broad, and in ten minutes either the same bird returned or its mate relieved it and flew straight into the hole where it remained. At 6.35 p.m. the cock arrived at the bank and called, whereupon the hen flew out and settled beside him. He showed great excitement on her appearance, quivered his wings, flew round her once, and then flew away. The hen immediately returned to the hole and was still inside when I left at dark.

From this day onwards the birds were only seen at the bank for brief moments when they changed places on the nest. The stake and the spray of bog-myrtle, formerly their favourite resting places, were no longer made use of, and both birds, when off duty, appeared to spend most of their time on the Broad. The cock took his share of brooding during the daytime, when the birds seemed to change places pretty often, but the hen always went on at night. Sometimes a bird would fly straight out of the hole and away without alighting, and within a period of between three and ten minutes another, or the same, would appear like a streak of blue and fly straight in again. In this case, of course, the sexes could not be distinguished, and it was impossible to say whether the sitting bird had come out for a "breather" or perhaps a meal, or whether it had been relieved by its mate. Sometimes again a bird would fly straight into the hole and in a few seconds its mate would fly out and away without alighting, which made it impossible to say which bird had relieved which.

The more usual method of changing places, however, gave one an opportunity, if a brief one, of identifying the sexes. In this case the arriving bird would settle on one of the two favourite perches and call, when the sitting bird would leave the hole and the relieving bird go in. I noticed that on the few occasions when the arriving bird did not call the one which was brooding left the hole just the same, and I came to the conclusion that it was the whirr of wings as the arriving bird settled that made its presence known.

In this way, over the whole period of brooding, the male was definitely seen to relieve the female on the nest at the following times: 8.30 a.m., 9.45 a.m., 10.15 a.m., 12.20 p.m., 12.45 p.m., 4 p.m., and 5.40 p.m. The female was seen to relieve the male at 11.45 a.m., 12.25 p.m., 6.30 p.m., 6.45 p.m. (twice), 6.50 p.m., 6.55 p.m., and 7.25 p.m. Upon a few occasions during the day the sitting bird, both the cock and the hen, was definitely seen to leave the hole, and after a short absence return to it. The longest absence noted thus was thirteen minutes.

The next thing, in order to establish as nearly as possible the incubation-period, was to discover when the young ones hatched, and it was apparent that the only clue to this would be the occasion of their being fed for the first time by their parents. This was first seen on May 23rd, when at 6.45 p.m. the hen took into the hole a tiny fish held in the tips of her mandibles with the head pointing outwards. Brooding, it will be recollected, began on either May 3rd or 4th, which gives an incubation-period of nineteen or twenty days, or allowing for the possibility of the nestlings having been hatched for twenty-four hours before being fed for the first time, of between eighteen and twenty days.

On the following day, in four hours' watching, the old birds were seen to enter the hole three times, the longest period that both were off the nest at the same time being fifteen minutes. On two occasions the bird flew straight in and it was impossible to see whether it had a fish or not, but on the last she—for it was the hen—settled on the stake before going in and was seen to have a fish of "small minnow" size in her bill, held in the same position as the day before. On the 25th three fish were brought to the nest in seventy minutes, and on the 26th four in thirty minutes, following an interval of twenty-five minutes in which none was brought. On these two days the bird which had taken in a fish stayed in the hole until its mate arrived with another, so that both were never off the nest at the same time. All the fish brought were of very small size, and all were held the same way with the head pointing forward, *i.e.*, in the correct position for the young ones to swallow head first. This is, I think, a somewhat remarkable fact. It will be remembered that the fish these Kingfishers caught for themselves were mostly of a size to require some effort in swallowing, that they were always manipulated into a "head towards throat" position before being swallowed, and were carried by the cock in that position when waiting to feed the hen. That these birds, directly the young are hatched, should bring them fish not only of exactly the right size, but held the reverse way to what is their usual habit, in order that their babies can swallow them head first, is to my mind an extraordinary example of that inherited knowledge which we call instinct.

Not only so, but when, as will be related, I transferred my observations to a second pair, I found that as the nestlings grow, so do their parents grade the fish they bring to suit their size, until shortly before they fly they are being fed on fish of the same size as the old birds catch for themselves.

The history of the pair of Kingfishers with their home in the fallen tree ends here. Continuous heavy rain fell on May 27th and 28th and made watching impossible. On the 29th a short spell in the hide was sufficient to show that disaster had befallen the brood, for the old birds never visited the nesting-hole, but were examining other old holes in the bank, and evidently again courting. Water was standing inches deep on the marsh on which the tree trunk lay, and I believe that either this or the actual rain soaking in between the roots had flooded the nest and drowned the nestlings. This pair were never again seen at the bank, but continued to frequent the Broad during the rest of the summer, and may possibly have bred again elsewhere.

Fortunately I had another pair of Kingfishers up my sleeve, and the scene now shifts to these. Their nest was in the side of a pit dug out in a grass field for the purpose of watering cattle.

On March 28th I had seen a bird fly out from a newly-dug hole beneath which, the pit being then dry, lay a heap of excavated earth. When they began to sit I do not know, but I think not before the latter half of April, as up till then I had several times seen both birds off the nest together. On June 12th, just before leaving home for three weeks, I examined the hole. The sides and floor were caked with excrement, flies buzzed about it and it smelt horribly. I stood for a while half hidden beside a tree, and in a little time a Kingfisher arrived and went in, but whether with or without a fish I could not see. I concluded that the young were still in the nest, though, as events proved, I was wrong, and the hen was probably then laying again.

On the morning of July 10th, after my return home, I was called into consultation by my seven-year-old son, who informed me that he had just poked a thin stick into the Kingfisher's hole and that a bird had flown out. I went with him to the pit and suggested that he should see if he could get his bare arm into the hole, and this he found he could do without much difficulty. He reported that at the far end of the hole he could feel a bird and on withdrawing his arm a second Kingfisher flew out. On putting his arm in again he said he could feel baby Kingfishers, one of which, together with some egg-shell, he then brought out. It was naked, blind and helpless, and comparing its size with that of a Kingfisher's egg, and allowing it the same rate of growth as a pigeon, a bird with nearly the same fledging-period, I estimated its age at about forty-eight hours. It was carefully returned to the nest and a few hours later a hide was erected from which the old birds could be watched entering and leaving the hole.

From the late date and the filthy condition of the hole when last examined on June 12th, there can, I think, be little doubt that this was a second brood hatched in the same nest as the first. I was fortunate in being thus afforded an opportunity of carrying on observations from the point where these came to an end with my first pair.

At 5.15 p.m. the same afternoon I entered the hide. At 5.20 a bird left the hole and flew towards the river and five minutes later one arrived and flew in. At 6 p.m. the other arrived and went in, and both birds were still in the hole together at 6.45 p.m. when I left. When I entered the hide again at 8.15 p.m. both birds were off the nest, and returned together a few minutes later, each with a tiny fish. One went in and immediately came out again, when the other went in and was still inside when I left twenty minutes later.

On July 13th three fish were brought in half an hour, the bird which had taken in a fish remaining in the hole in each case until its mate arrived with another. On the 14th, during three-quarters of an hour watching, four fish were brought, the last three I believe by the cock, the hen staying in the hole. All were held in the same position as noted in the first pair, *i.e.*, with the head pointing forwards. On July 16th, between 3 and 5 p.m., six fish were taken in, these being of noticeably larger size than those on which the young were first fed. The birds only remained a few seconds in the hole each time until the last visit, when the female, which had taken in a fish, stayed in the hole until I left, a quarter of an hour later. On the 26th the young were fed twice in thirty-five minutes and could now be heard uttering a loud trilling chirrup each time the old bird entered the hole. On the 30th two fish were brought in twenty-five minutes, these being now as large as those which the first pair were seen to catch for themselves.

On the 31st the arm of my small son was again requisitioned and he brought out from the nest one of the youngsters for examination. It was fully grown and completely feathered, the wings appearing to be of full length, but the basal third of the primary quill-feathers were still enclosed in their sheaths. Each day for the next four days the young ones could be heard in the nest, and the last occasion on which a fish was seen to be taken into the hole was at 7 p.m. on August 4th. An hour's watching on the afternoon of August 5th showed no sign of the old birds and no sound of the young, and my son, exploring the hole for the last time, found it was empty. If I was right in judging the nestling examined on July 10th to be then forty-eight hours old, the period between hatching and flying was twenty-seven days.

NOTES ON NORTH ATLANTIC BIRDS, SUMMER 1932.

BY

CYNTHIA LONGFIELD, M.B.O.U. AND RUTH BLEZARD, M.B.O.U.

WHILE crossing the Atlantic from Liverpool to Quebec and back in 1932, the outward journey in June, the homeward journey in August, we made the following notes on the birds seen. We took careful daily observations from 11.30 a.m. to 12.30 p.m., and also watched at other times of the day when possible.

Journeying westwards, our six days' observations from June 18th to 23rd covered the area from Ailsa Craig to the Gulf of St. Lawrence, inclusive. The last day, the driving rain and mist during the hour of watching made observation quite impossible, but notes were taken a few hours later the same day. The weather, otherwise, was mostly fine with some sun, but cold. The wind varied from Force 2 to 6, and came from all quarters, the strongest winds being from the south.

On the eastward journey, our six days' observations from August 20th to 25th covered the area from the mouth of the St. Lawrence River to Inishtrahull, Northern Ireland. The weather was foggy for five days out of six, visibility being very poor, with an exception on August 23rd, when the only land bird of the voyage was seen. The wind was never more than Force 4, varying from E.S.E. through S. to S.S.W.

GANNET (*Sula bassana*)—(British waters):—

Lat. 55° 15' N. Long. 5° 06' W. June 18th. Large numbers (proportion of immature birds to adults about 3 to 12).

Lat. 55° 34' N. Long. 7° 42' W. August 25th. About 9 (adult and immature).

(American waters):—

Gulf of St. Lawrence June 23rd. Large numbers.

Lat. 49° 41' N. Long. 65° 30' W. August 20th. One adult.

GREATER SHEARWATER (*Puffinus gravis*)—(British waters):—

Lat. 56° 11' N. Long. 14° 25' W. June 19th. Twenty-two.

Lat. 56° 34' N. Long. 27° 40' W. June 20th. One.

None on return in August.

(American waters):—

Lat. 53° 29' N. Long. 50° 30' W. June 22nd. Many.

Lat. 51° 53' N. Long. 55° 11' W. August 21st. Three.

FULMAR PETREL (*Fulmarus g. glacialis*):—

Lat. 56° 11' N. Long. 14° 25' W. June 19th. About 50 with us all day.

Lat. 56° 34' N. Long. 27° 40' W. June 20th. Two an hour before daily observation.

Lat. 55° 42' N. Long. 38° 24' W. June 21st. Nine, mostly in pairs, increased later to 24.

FULMAR PETREL (*continued*):—

Lat. $53^{\circ} 29' N.$ Long. $50^{\circ} 30' W.$ June 22nd. Sea alive with them.
One all-grey bird seen.

Lat. $54^{\circ} 24' N.$ Long. $44^{\circ} 34' W.$ August 22nd. Five.

Lat. $56^{\circ} 03' N.$ Long. $44^{\circ} 34' W.$ August 23rd. Six. More later
in day.

Lat. $56^{\circ} 21' N.$ Long. $20^{\circ} 09' W.$ August 24th. One.

KITTIWAKE GULL (*Rissa t. tridactyla*)—(British waters):—

Lat. $55^{\circ} 15' N.$ Long. $5^{\circ} 06' W.$ June 18th. One amongst other
gulls.

Lat. $56^{\circ} 11' N.$ Long. $14^{\circ} 25' W.$ June 19th. Six among Fulmar
Petrels.

None on return in August.

LITTLE AUK (*Alle a. alle*)—(British waters):—

Lat. $55^{\circ} 15' N.$ Long. $5^{\circ} 06' W.$ June 18th. Several.

(American waters):—

Lat. $53^{\circ} 29' N.$ Long. $50^{\circ} 30' W.$ June 22nd. One.

Gulf of St. Lawrence June 23rd. Several.

None seen in August.

GREATER BLACK-BACKED GULL (*Larus marinus*)—(American waters):—

Gulf of St. Lawrence August 20th. A few.

Lat. $51^{\circ} 53' N.$ Long. $55^{\circ} 11' W.$ August 21st. A few.

None seen in June.

WHITE-RUMPED PETRELS (Sp. ?):—

Lat. $56^{\circ} 11' N.$ Long. $14^{\circ} 25' W.$ June 19th. One.

Lat. $55^{\circ} 42' N.$ Long. $38^{\circ} 24' W.$ June 21st. Three.

Lat. $53^{\circ} 29' N.$ Long. $50^{\circ} 30' W.$ June 22nd. Sea alive with them.

Lat. $51^{\circ} 53' N.$ Long. $55^{\circ} 11' W.$ August 21st. Three.

LONG-TAILED DUCK (*Clangula hyemalis*)—(American waters):—

Gulf of St. Lawrence June 23rd. Three on the water.

PEREGRINE FALCON (*Falco peregrinus*):—

Lat. $56^{\circ} 08' N.$ Long. $29^{\circ} 32' W.$ August 23rd. Two birds. At
6 p.m. the birds appeared
from over the port bow; the
ship was then doing about 16
knots. They turned and tried
to catch up, but were soon
left astern. Wind from S.E.
Moderate. Weather clear.

In August, on the homeward journey, all birds left the ship the moment the fog closed down, even the Fulmar Petrels. It was noticeable, whenever the fog cleared, the birds took from half an hour to an hour before they found the ship.

The Fulmar Petrels often settled on the water while following the ship, the White-rumped Petrels never. The latter, also, never came very close. Gannets occasionally settled. Greater Shearwaters and Little Auks or Dovekies were mostly overtaken on the water by the ship, the former usually taking to wing, the latter escaping by diving.

As for the Peregrine Falcons, it was impossible to say where they were coming from or which land they were making for.

NOTES ON THE TREE-SPARROW, 1932.

BY

A. W. BOYD.

THE following notes from Cheshire confirm and supplement those printed in *British Birds*, XXV., pp. 278-285, and are given under similar headings.

BREEDING HABITS.

Return to the Nesting Trees.—The first were noticed on March 9th; by March 18th the birds had returned in force, and about twenty together were seen in one of the trees. These dates confirm the records of other years very closely.

Nest-building.—Four boxes were completely emptied and daily watch kept to discover when nest-building actually began, as this had not been observed before.

1. A few roots on March 18th; on March 22nd the formation of a nest was begun, but it was left alone for weeks and it was not till June 2nd that the nest was complete and eggs were laid on June 4th.

2. A few feathers on March 22nd; a few roots May 2nd; complete nest May 9th.

3. A few feathers on April 29th; complete nest May 6th; one egg May 9th.

4. Nothing by July 6th, and we thought that the box was not going to be used, but there was a nest with four eggs on July 27th.

It is evident that the birds make no serious attempt to build immediately they return, but on the other hand we know that nests have been completed rather earlier than in any of these four boxes.

Eggs and First Date of Laying.—There was one set of seven eggs this year (June 2nd), but only two young were reared from them, and five eggs were addled. The first of all were laid about May 5th, and in several boxes the first was laid on May 9th—much as in other years—but others did not lay till the end of May or early June, and in two boxes till July.

Number of and Intervals between Broods.—The intervals between the flight of the first brood and the laying of the first egg of the second brood varied considerably. In several boxes not more than six or seven days elapsed; in others two or three weeks, and in two boxes four weeks.

As usual, most boxes held two broods.

In 1931, with a very wet August (6.97 inches), there were no third broods, nor broods at all in August, but in 1932 (1.58 inches) three broods were reared in one box, and in two others third sets of eggs were laid, and six broods were marked in that month.

It is quite clear that in this district at least third broods are the exception, even in good weather.

Size of Broods.—

	No. of broods ringed.	1	2	3	4	5	6	Average brood for month.	Total broods for year.	Average for year.
May-June	15	2	2	4	5	2	—	3.2	31	3.29
July	10	1	2	2	3	2	—	3.3		
August	6	—	—	3	3	—	—	3.5		

The average was distinctly lower than in any of the previous four years, and yet the rainfall for the four months, May to August (10.21 inches), was less than in any of these years, except 1929 (10.04 inches).

The first sets of eggs coincided with the wettest period (May—4.61 inches), and perhaps they did badly on that account, and, as will be seen, the later ones did rather better in the drier weather.

On the whole, the broods were smaller than might have been expected in so comparatively dry a summer, but as in other years wet weather in the earlier months of the nesting season had a bad effect on the bird's fecundity; this year's records do not, however, fully bear out the conclusions drawn from similar comparisons in other years.

Use of other Birds' Nests.—Once again a Tree-Sparrow reared a brood in a box in which a House-Sparrow had first reared a brood; this was the same box in which the two species bred in 1931.

SONG.

Having in mind Mr. J. Walpole-Bond's notes (*antea*, XXV., pp. 332-3), special attention was paid to the "song" this year, but there are only two instances to record: April 2nd. Three or four in a tree together sang "*Chup chi chit*"; May 30th. One sang "*Chip chip chichi*"—much the same as the song recorded by Mr. Walpole-Bond.

NOTES

ALPINE ACCENTOR SEEN IN KENT.

ON May 1st, 1932, at Leathercote Point, St. Margarets-at-Cliffe, I came across a bird which I identified as an Alpine Accentor (*Prunella collaris*). It remained for some considerable time in the same area around some small low-lying bushes on the cliff edge and I was able to watch it at close quarters. The points which seemed to strike me particularly about it were firstly, its only slight superficial resemblance to our Hedge-Sparrow (*P. modularis occidentalis*). As far as the size was concerned it was obviously a slightly larger bird, not very much so but distinctly more bulky, while its movements were considerably slower. In general coloration it was definitely brighter, the lightish throat was easily seen, as were also the white wing markings and the brighter brown flanks. The legs were definitely pinkish. It uttered a few notes, but I could not correctly give details of them in view of my general inability to describe accurately any of the less obvious bird notes.

G. E. TOOK.

WIGEON NESTING IN KENT.

I HAVE been tenant of an extensive area of shooting in the marshes of north Kent for three years and have in previous years turned down a certain number of Mallard (*Anas platyrhynchos*) and Mallard \times Pintail (*A. acuta*) hybrid duck, but no other species. Wigeon (*A. penelope*) have not to my knowledge ever been turned down there and there are no pinioned birds in the vicinity. For the first time, in 1932, I collected two or three dozen Mallard eggs there, which I took away to Broadstairs and hatched in an incubator, turning out the young birds on the shooting when sufficiently grown, a few being kept wired in to act as decoys. In the third week of June two friends, who were in the habit of shooting with me, went over to try to get some more Mallard eggs and the shepherd, who also acts as keeper, told them of a nest that he had found the previous day while hoeing thistles. They went straight off to the spot, the bird flew off the nest, and they took six of the eggs. No notice appears to have been taken of what she was. The nest was in a very rough marsh about 100 yards from a tidal creek, it contained ten eggs, which looked rather "pinkish," but the colour of the nest down was not noticed. The eggs were brought straight to me and put in an incubator and they hatched in just over three weeks. Three young were reared to maturity and proved

to be not Teal, as I had at first thought, but Wigeon. They are still alive at Broadstairs.

On interviewing the shepherd recently, he was genuinely surprised to hear that it was unusual for Wigeon to nest in the south. He is a very knowledgeable man and has shot in this same locality all his life and says that for years and years he has seen Wigeon flying about in June and July. He distinctly remembers seeing a Wigeon drake rise from a dyke in June, 1915, and fly round in circles in an anxious manner. He looked round for the nest and close by he put the duck off it. I myself have often visited the locality in May and June and have frequently seen Wigeon flying round.

ARNOLD CHURCHILL.

IN view of what I wrote in 1908 (*History of the Birds of Kent*, p. 360), Mr. Churchill's note is very welcome and contains the kind of evidence I have been expecting to appear ever since. I am well acquainted with the locality to which Mr. Churchill refers and it still remains one of the wildest and most sparsely inhabited areas in the county and was one of those that I had in mind when writing as I did.

Since definite proof of nesting has now been furnished it may be as well to recount what further evidence I have been able to collect with regard to Romney Marsh. The occurrence of Wigeon there late in May has already been commented upon (*l.c.*) and observations since have confirmed this as an annual event. The passage migrants, sometimes in large numbers, are to be seen in March and April and leave pretty regularly during the third week of the latter month, but a few always remain till at least the middle of May: my latest dates are 27th in 1908, 25th in 1923 and 1924, and 24th in 1925. Later than this I have seldom myself been out to observe, as by then the reeds have grown to such a height that useful observations cannot be made without undue disturbance. There is, however, much the same possibility of nesting in Romney Marsh as there was in those of the north of the county. Mr. G. F. Finn, with whom I have corresponded from time to time; was able to carry the matter still further, though his evidence would perhaps not be quite complete enough to warrant publication except in connexion with Mr. Churchill's note above. Writing on August 28th, 1910, he said:—

“I have always suspected that Wigeon breed in Romney Marsh occasionally, and this year our “looker” tells me that he has seen some about all the spring and summer, though he did not find a nest. However, when I was shooting with a party of friends on August 1st, someone winged a bird which

my dog caught and which proved to be a young Wigeon. I took it home and kept it alive for four or five days, but eventually it died—no doubt from its wounds. I am quite certain it was a young bird and should say it had never flown much." Unfortunately the skin was not preserved, but in subsequent conversation Mr. Finn told me that the bird had down still adhering to the wings when shot. N. F. TICEHURST.

MELANISTIC MAGPIE IN YORKSHIRE.—Mr. Arthur Whitaker informs us that on August 14th, 1932, he saw on Abbeydale Golf Course, Beauchief, near Sheffield, a Magpie (*Pica pica*) which at first appeared completely black. Closer inspection showed that the tail- and wing-feathers had the usual bronze and greenish reflections and that all the parts normally white were a very deep sooty brown. In flight the expanded wings showed a slight streaking of a lighter shade, but there was no actual white.

IMMIGRATION OF WAXWINGS.—The following rec rds are additional to those published in our last number (p. 259):—

Isle of May.—One found dead on December 1st (E. V. Baxter and L. J. Rintoul, *Scot. Nat.*, 1933, p. 26).

Dumfriesshire.—One caught by a cat at Glencaple on November 14th (H. S. Gladstone, *l.c.*, p. 25).

Westmorland.—Miss M. R. Monro writes that she saw two in Crosthwaite on January 19th.

Northumberland.—We are informed by Lady Grey that she saw two Waxwings at Howick on November 8th, and on the 12th there were eight, while in the following week the number had risen to ten or twelve and they were still present when Lady Grey left on November 20th. The birds fed on *Berberis* berries, chiefly those of *B. polyantha*, the branches of which they completely stripped. Lady Grey's gardener states that there were six Waxwings in the garden last year and that on that occasion they fed on yew berries.

Yorkshire.—Mr. J. G. Davis writes that he and Mr. F. Snowdon watched Waxwings on the sides of a railway cutting between Whitby and Ruswarp, a haunt which they frequented in the previous year. Four birds were first seen on November 8th, fifteen on the 24th, twenty-two on the 25th, and at various dates in December from three to twelve were seen. Mr. Arthur Whitaker informs us that he watched as many as twenty-two at this place on December 17th, but the next morning he saw only four. These fluctuations seem to denote local movements.

Messrs. Davis and Snowdon also saw twenty near Robin Hood's Bay on January 4th, 1933. They noticed that the birds fed on both berries and insects. On December 16th and 22nd, both of which were sunny days, the birds were feeding entirely on insects, which they were constantly taking in the air by making short flights after the manner of a Flycatcher.

Mr. A. Hazelwood informs us that the plumage of one shot from a flock of Starlings near Doncaster on December 28th was much begrimed and the bird had doubtless been in the district some time.

Norfolk.—Mr. R. M. Garnett tells us that two Waxwings were seen at Kelling (Holt) on January 4th, 1933.

Suffolk.—Mr. J. B. Watson informs us that Mrs. Clodd saw four Waxwings in a hedge near Orford on November 21st, 1932, and Miss

Ferrier is informed by Mr. F. C. Cook that he saw near Lowestoft two on November 4th, twelve on the 20th, these latter staying in the same place until December 4th, and two on January 8th, 1933.

IRELAND.—The Rev. P. G. Kennedy informs us of the following occurrences:—

Dublin.—One seen early in December, 1932, between Dublin City and Howth, and another early in January, 1933, at Dollymount.

Kerry.—One shot at Caragh Lake and received by Mr. Williams on December 14th, 1932.

Queens Co.—One shot at Birr and received by Mr. Williams on December 19th, 1932.

BLACK REDSTART IN SURREY.—Mr. E. L. King informs us of a Black Redstart (*Phœnicurus o. gibraltariensis*) at Mortlake, which he first saw on December 8th, 1932, and which was still in the neighbourhood at the time of writing (January 18th).

BREEDING OF HONEY-BUZZARDS AND HEN-HARRIERS IN GREAT BRITAIN.—Mr. C. H. Gowland describes (*Bull. Brit. Ornithological Association*, Vol. III., pp. 108-110) how that, in 1928, he visited a wood where a keeper was trying to shoot a pair of large hawks. After some time spent in watching, Mr. Gowland saw one of the birds go to a nest. On climbing the tree he found an old crow's nest renovated and built up with many fresh leafy twigs of beech. There were two eggs, which he at once recognized as those of the Honey-Buzzard (*Pernis apivorus*). Thinking it was hopeless to prevent the keeper from shooting the birds he packed the eggs to take them away, but on reconsideration returned the eggs to the nest and determined to make an effort to save the birds. Undertaking to pay compensation for any damage they did and explaining that they were harmless to game, he eventually was promised by both keeper and owner that the birds should be spared for one year. Subsequent visits were made and the young flew. A pair of Honey-Buzzards has returned to the wood and young have been reared each year since. Mr. Gowland remarks that before nesting the birds spend much time on the ground, but later are more often in the tree tops, probably searching for a nesting-site. During incubation a fresh supply of green leaves is added to the nest daily. Both birds take part in incubation and rearing the young. During five years he has heard the note only on very few occasions and usually when the male is calling to its sitting mate.

It is indeed interesting news that the Honey-Buzzard is again nesting in this country, and Mr. Gowland is to be heartily congratulated on his successful efforts to preserve these birds. His is a shining example to many amateurs and shows what can be done by tact and perseverance, to say nothing of the sacrifice of pecuniary gain.

In the same *Bulletin* (p. III) we are informed that a nest of a Honey-Buzzard was found in another locality in 1923, a single bird was seen in 1930, and a pair with a nest containing one young one in 1932.

Mr. Nethersole Thompson announced (p. 106) that he and Mr. C. V. Stoney found the nest of a Hen-Harrier (*Circus c. cyaneus*) in one of the Home counties in 1932. The nest contained five eggs and four young were hatched. This is, we believe, the first authentic nest of the Hen-Harrier in England for many years. It is one of our rarest breeding birds and should in consequence have the rigid protection of all ornithologists. With such an enlightened example as Mr. Gowland's before us, can we not hope that the Scottish breeding Hen-Harriers, which are constantly harried, will in future be allowed to hatch off and be given every chance to increase.

H. F. W.

GADWALL AND FERRUGINOUS DUCK IN SURREY.—Miss C. M. Acland informs us that she watched a drake Gadwall (*Anas strepera*) on a pond at Godstone on November 27th, 1932. The bird was in company with two Mallards and Miss Acland was able to keep it under observation for a considerable time and identify it clearly. The species appears to have been seldom recorded for Surrey.

Mr. J. B. Watson writes that on December 22nd, 1932, at Virginia Water, he watched for a long time a duck which was on the water near to, but not among, a gathering of Common Pochards. It was very shy and was swimming about fast and diving repeatedly, remaining for a long time under water. Through his telescope Mr. Watson saw clearly the very light iris, the warm brown colour of the head and neck and other characters. In flight it uttered a short, harsh note, and the white wing-bar was very pronounced, and Mr. Watson was able to identify it as a Ferruginous Duck (*Nyroca n. nyroca*).

In view of Dr. Carmichael Low's letter on another page concerning the rearing and allowing to grow up full-winged in St. James's Park of both Gadwall and Ferruginous Duck, it seems possible that this may account for the presence of the above recorded birds. It is most unfortunate that aviculturists so frequently allow unopinioned birds their liberty that most rare "waterfowl" must be under suspicion of being escapes.

GARGANEY IN WORCESTERSHIRE—*Correction*.—The dates given on page 252 during which a pair of Garganey were seen on the Bittell Reservoirs were wrong, and should be March the 26th to April the 5th, and not as stated November the 26th to April the 15th.

REVIEWS.

A History of the Birds of Suffolk. By Claud B. Ticehurst. (Gurney & Jackson). Illustrated. 24s. net.

As might be expected, this book, coming from the pen of so accomplished an ornithologist as Dr. C. B. Ticehurst, will rank among the very best of county avifaunas. With this work and the recent ones of Mr. Rivière on Norfolk and Mr. Glegg on Essex, East Anglia is indeed well provided with accounts of its birds, and this is perhaps as it should be since the region is to us one of the most interesting ornithologically. Norfolk and Suffolk have two main attractions, their coasts are a wonderful highway for migrants and their fens and broads harbour a remnant of those interesting breeding birds which are such a feature of much wider spaces in Holland and elsewhere. It is because suitable country for these birds is now so restricted in this land that we perhaps think more of them than the more familiar but more wonderful colonies of sea-birds on our cliffs, which in their turn are the envy of our continental confrères.

So far as migrants are concerned, Suffolk is probably little behind Norfolk, but it has attracted comparatively few observers. Dr. Ticehurst gives a very concise account of migration as a whole, but a feature of his book is a detailed account of migration under each species, and this is largely based on his own observations and those of Mr. F. C. Cook at Lowestoft. As to rarities, Suffolk has no such well-worked place as Cley, and consequently records of scarce migrants are much less frequent, and a good many Passerine species recorded from Norfolk do not figure in the list, while most of the rare waders, gulls and terns included here as Suffolk hail from Breydon and can thus be claimed by both counties.

The whole list of species, however, does not fall very far short of that for Norfolk. Mr. Rivière had a total of 342 species and sub-species and Dr. Ticehurst enumerates 313. Of breeding birds Suffolk has 120 including twelve which breed only occasionally, while Norfolk has 122 including seven in the latter category. Of the scarcer breeding birds, Norfolk certainly has the advantage in point of numbers, owing to a larger amount of suitable territory and in some cases, such as the Harriers, to a more enlightened treatment by owners and gamekeepers. Only Montagu's breeds in Suffolk and of that Dr. Ticehurst has a sad tale to tell of its slaughter. Suitable ground for Bitterns is very restricted, but it has bred in recent years in two, possibly three, localities. For the same reason Bearded Tits are nowhere numerous (six pairs Dr. Ticehurst thinks is the greatest number for any one locality), and they are subject to two destructive factors—very severe weather and the burning or cutting of reeds.

Of the scarce breeders we may mention evidence for the occasional nesting of Hooded Crows (which is also recorded for Norfolk, though no ornithologist seems to have examined an actual nest); in a full and careful history of the Dartford Warbler we are told that gorse and heather have been burnt and grubbed to such an extent as to lead to its practical extinction; there is no good record of a single Marsh-Warbler and in Norfolk there is no certain case of its breeding; a pair or two of Short-eared Owls breed in most years; the Ruff is thought to have bred in 1898 on the Duke of Grafton's estate; there is some evidence that the Avocet bred as late as about 1882 at Thorpe Mere; the Sandwich Tern, so numerous in Norfolk, nests only occasionally.

Of migrants, Dr. Ticehurst states that he has only one authentic record of an immigrant Carrion-Crow and it is important to note that Mr. Rivière did not know of one in Norfolk, though the bird is so often

thought to be an immigrant, being no doubt confused with the Rook. An identified example of the Continental Jay (*Garrulus glandarius glandarius*) on September 29th, 1915, at Lowestoft, should be noted, as also two identified specimens of the Parrot-Crossbill (Blythburgh 1818, near Bury, 1850). Amongst the few Ortolans recorded, that for May, 1859, at Lowestoft, is omitted. The only Yellow-browed Warbler obtained was on October, not September, 12th, 1915. The Song-Thrushes, to which Dr. Ticehurst refers as difficult to determine as between ours and the Continental form, perhaps originate from Holland, where the Song-Thrush is intermediate in coloration. Usual dates for the appearance of the Continental Robin as a passage migrant are given as from September 1st to the end of November and from the last week of March to the end of April, and there are also three instances of wintering in December and January. Dr. Ticehurst considers that three of the records of Dippers refer to the typical form *Cinclus c. cinclus*. Some records are given of the Northern Spotted Woodpecker and the Dark-breasted Barn-Owl. Two examples of the Spotted Eagle, one on November 4th, 1891, at Sudbourne and the other on January 2nd, 1892, near Southwold, are stated to be *Aquila clanga*. Dr. Ticehurst has been able to examine only three of the Little Bustards recorded in Suffolk, and these belonged to the eastern form (*Otis t. orientalis*), as did one from Caxton, Cambridgeshire, December, 1832, so that we still require proof that the western bird ever occurs with us. A Pectoral Sandpiper is noted as having been clearly identified by the author and Mr. F. C. Cook on September 6th, 1925, at Blythburgh Fen. The Scandinavian Lesser Black-backed Gull (*Larus f. fuscus*) Dr. Ticehurst considers to be a regular passage migrant occurring between April 6th and May 10th and from the end of August to November 4th, and no winter records are given.

Two sub-species included by Dr. Ticehurst and not admitted to our *Practical Handbook* call for special note. These are the Scandinavian Jackdaw (*Colaptes monedula monedula*) and the Eastern Ringed Plover (*Charadrius hiaticula tundrae*). Of the first it was said in the *Handbook* (Vol. I., p. 19, footnote) that it might occur, but that we had been unable to examine a specimen. Dr. Ticehurst now states that he has from time to time identified specimens hung up as scarecrows and that on March 3rd, 1911, Mr. E. Knight brought him two obtained out of a migratory flock at Corton near Lowestoft. We may hope that these latter have been preserved as tangible proof of the bird's occurrence. The case of *Charadrius h. tundrae* does not seem to rest on such sure ground. All the instances are very old records and the measurements given for the two forms do not agree with the late Mrs. Meinertzhagen's notes in the *Handbook* (Vol. II., pp. 518 and 519, footnotes), where she shows that the measurements overlap and notes that the British bird is darker in winter than in summer plumage, so that it seemed to her impossible to differentiate migrants.

Except in the minor point of brackets round authors' names being misplaced in a good many instances and some mis-spelt proper names, the book seems free from misprints.

We congratulate Dr. Ticehurst on a fine piece of work which should be in every ornithologist's hands. H.F.W.

A Catalogue of the Birds of Northumberland. By George Bolam. (Trans. Nat. Hist. Soc., Northumberland, Durham and Newcastle-upon-Tyne (New Series), Vol. VIII.).

BIRDS in Northumberland have been much written about in different ways. We have Abel Chapman's entertaining books, *Bird Life of the Borders* and *The Borders and Beyond*; Mr. Bolam's own delightful

volume on the *Birds of Northumberland and the Eastern Borders*; Mr. A. H. Evans's *Fauna of the Tweed Area*, and two *Catalogues* previous to the present one and issued by the same Society, namely Selby's in 1831, and Hancock's in 1874.

In the present work Mr. Bolam very briefly capitulates important information previous to 1912, the date of his book referred to above, and brings matters up to date from then.

Among breeding birds he records a continued increase of the Hawfinch besides some evidence for possible migration; Crossbills bred in 1931; Nuthatches still nest in a restricted area; further records are given of the breeding of the Lesser Whitethroat; the presence of Garganeys is noted between March and May in 1928, 1929 and 1931; Fulmars nest in two localities, and haunted a third (in 1931) nearly a mile from seawater; the Spotted Crake is stated to be "probably steadily, if slowly, increasing in numbers as a summer visitor, and now nesting in some quite unsuspected places"; the Turtle-Dove, of which there was no proof of breeding prior to 1912, has since become a more or less regular nester in several districts. An illuminating note on the Nightingale, which has been reported as singing on a number of occasions, is that the Rev. Father Kuyte has been in the habit of keeping Nightingales in captivity for the last 45 years and birds have escaped or been set at liberty on several occasions, and notably in those years and near those places where they were reported as singing! Thus do aviculturists upset the calculations of ornithologists.

Of migrants, Mr. Bolam has a good many to add, chiefly by the work of Mr. W. G. Watson, on Holy Island. Most of these were published at the time in our pages, but we notice two Red-breasted Flycatchers in September, 1925, and two Alpine Swifts on July 12th, 1930, of which we have no note.

A good many rarities are admitted fully to the list on the evidence of sight records, which we think a mistake. These include such birds as Hornemann's Redpoll, Continental Coal-Tit and a Black-browed Albatros.

Mr. Bolam adopts the nomenclature used by Dr. Clarke, which is a pity, since it is quite obsolete and full of exceptions and inconsistencies. He is scornful of sub-species, and in discussing the Little Bustards says that it is probably impossible to say now to which race the Northumberland specimens belong—"nor can it much matter." But does not every fact matter and does not even the origin of these birds interest Mr. Bolam, apart from taxonomic questions of which he is obviously no student? Yet he would have us believe that he can differentiate in the field such sub-species as Hornemann's Redpoll and the Continental Coal-Tit!

But these are comparatively small defects and Mr. Bolam's *Catalogue* is undoubtedly a good and useful piece of work, for which ornithologists will be grateful.

H.F.W.

LETTERS.

LOCAL RECORDS.

To the Editors of BRITISH BIRDS.

SIRS,—I am in possession of letters relating to the birds of the following districts and if application is made to me at the address below I am prepared to post them to those who may be sufficiently interested.

Bedfordshire, Berks., Bucks., Cornwall, Cumberland, Devon, Dorset, Durham, Gloucester, Hants., Hunts., Kent, Lancs., Lincoln, Norfolk,

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RINGED CHAFFINCH'S POSSIBLE ESCAPE FROM CAPTIVITY.

To the Editors of BRITISH BIRDS.

SIRS,—The recovery of a ringed Chaffinch (F1192, *antea*, page 210) suggests a possibility that should, I think, be borne in mind. The bird was ringed in Cheshire in May, 1927, and recovered in Bermondsey, London, in April, 1932. An obvious explanation of this somewhat unusual movement—for most of the recoveries of ringed Chaffinches have been at no great distance from their place of marking—is that the bird had been taken by a bird-catcher and kept in captivity, and had finally escaped or been released.

This recovery reminds me of another which has not been published in the list of recoveries. My attention was drawn to a note in the *Daily Dispatch* of October 17th, 1930, which gave the number of a ringed Linnet (J5702) at that time in a cage in Warrington, Lancs. I had ringed this in Cheshire as a nestling on May 28th, 1930, and on getting into communication with the owner I found that it had been caught by a bird-catcher at Risley Moss, Woolston, three or four miles east of Warrington, on September 19th, 1930, and purchased from him.

In this case at least the ring had not attracted the attention of the bird's first owner enough to cause him to take it off and examine it, and very possibly the Bermondsey Chaffinch had been wearing its ring throughout a long captivity.

Such a possibility is always present, more particularly in the case of finches such as are often kept in cages. A. W. BOYD.

[Although diligent enquiry at the time did not reveal any direct human intervention, it is quite likely, as Mr. Boyd suggests, that the Chaffinch was caught and transported and then escaped. In any case this recovery could not be regarded as indicating a normal movement unless it were confirmed by future records.—H.F.W.]

GREEN WOODPECKER BATHING AND DRINKING.

To the Editors of BRITISH BIRDS.

SIRS,—I notice in the January issue (p. 257) a note in which the statement is made that many hours watching of all three kinds of British Woodpeckers has never revealed a case of drinking or bathing.

So far as the Green Woodpecker is concerned, I have frequently seen them both having a drink and sometimes a bath at the various drinking pans on the lawns at my mother's place at Aldingham, in Suffolk. E. FRASER STANFORD.

PERSISTENT BREEDING OF CORMORANTS IN ST. JAMES'S PARK.

To the Editors of BRITISH BIRDS.

SIRS,—In September, 1931, as has already been recorded (Vol. XXV., p. 171), the pair of Cormorants (*Phalacrocorax carbo*) which had been kept pinioned in St. James's Park for eleven years, hatched two chicks. One of the youngsters died, but the other was hardy and was reared successfully.

Early in January, 1932, the male began making overtures to his mate. He displayed before her on various occasions and carried sticks to her, a broad hint that they should begin nest-building. As a rule she was indifferent, but far from being discouraged, he dropped

the offering enticingly at her feet. Sometimes, however, she accepted the token and then they would have a playful tug-of-war with it.

In March they abandoned their winter roost and took possession of the Pelican Rocks, and on March 23rd the male sat on the old nest for several hours and gave many perfect exhibitions of his nuptial display. From that date onwards the nest was occupied continuously until the middle of October, almost seven months.

Brooding must have begun about April 10th or 12th, for the pair were observed feeding a chick on May 10th.

This chick was reared and, as soon as it left the nest, brooding began again. A second chick was hatched on or before July 20th. For a time it prospered, but it died when it was about a fortnight old and was thrown out of the nest. Mr. Hinton, who picked it up, says that it was about the size of a Wood-Pigeon.

Nothing daunted, the parents made a third attempt and this time the hatching occurred on October 9th. The chick died, however, within a week, and the pair then retired to winter quarters. Nevertheless, on December 17th they were again seriously contemplating nest-building; the cock was displaying and fetching sticks and the hen was accepting and toying with them.

The nest was a substantial structure built of sticks which were cleverly woven together. Originally it was about eighteen inches high, but during 1932 the owners increased its height by about six inches. It was removed from the rocks early this year when the bed of the lake was cleaned.

The two young Cormorants have been allowed full freedom and may often be seen flying over the lake. They even sometimes perch high up among the branches of the trees on Duck Island and flap wings there after a long swim.

While the nesting was in progress they roosted on the rocks in close association with their parents. On one occasion the elder showed definite interest in the problems of nest construction. It fetched a long feather, which might have been a primary from the wing of a swan, and endeavoured, by passing it to and fro in its beak and biting it at various points, to render it more pliable, but did not go so far as to offer it to the sitting bird. This would be accounted for if, as Mr. Hinton assumes, the youngster is a female.

During the autumn a fifth Cormorant was seen several times on the lake.

CHARLES S. BAYNE.

FULL-WINGED GADWALL AND FERRUGINOUS DUCKS REARED IN ST. JAMES'S PARK.

To the Editors of BRITISH BIRDS.

SIRS,—On January 12th, 1933, Mr. C. Oldham noted eight Gadwall (two males and six females) on the Round Pond in Kensington Gardens and some of these birds were seen again by Mr. Holte Macpherson, Mr. F. R. Finch and myself on January 15th, 1933. On the following day Mr. Holte Macpherson and myself called on Hinton, the keeper in St. James's Park, to see if he had any full-winged Gadwall there. We found that he had, the four pinioned pair of Gadwall residing there having produced fifteen young last summer (1932), which were allowed to grow up full-winged. He at once said that the birds on the Round Pond were undoubtedly some of these and that they had left St. James's Park because of the draining of the lake for repairs.

He also told us that a pair of pinioned Ferruginous Duck or White-eyed Pochard had brought up three young ones there last summer and they were similarly allowed to grow up full-winged. G. CARMICHAEL LOW.



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By T. H. HARRISSON AND P. A. D. HOLLON

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THE GREAT CRESTED GREBE ENQUIRY (1931). SCOTLAND.

BY

T. H. HARRISSON AND P. A. D. HOLLOM.

IN the Great Crested Grebe Enquiry (1931) we were unable to obtain such detailed information for Scotland as for the rest of Great Britain, and therefore in the main report on the Enquiry (*antea*, pp. 90-92) only a summary of the results was given.

In general, information on life-history was incorporated in the main report. There are, however, two points regarding relations with other species that we would like to mention. W. B. Alexander, who personally undertook all Galloway, found Great Crested Grebes (*Podiceps c. cristatus*) on 13 of the 90 waters visited, and Little Grebes (*P. r. ruficollis*) on 12, but in no instance were the two species found on the same water. At Redmyre (Perths.) and Lochindores (Angus), where there are colonies of Black-headed Gulls (*Larus r. ridibundus*) the Great Crested Grebes nest about a month earlier than those on lower and less exposed lochs, as late nests would suffer from the Gulls. (H. Boase.)

Below we give more fully the data obtained, but lack of information compels the introduction of two categories not used in the tabulated report on England and Wales, namely, waters occupied in former years, but for which no details relating to 1931 were received; and waters where Grebes have been seen in summer, but where nesting has not been proved. The article by Miss E. V. Baxter and Miss L. J. Rintoul "On the Great Crested Grebe as a Scottish Breeding Species" in the *Scottish Naturalist*, 1919, pp. 67 to 77, has been of great value in preparing the present report. In a number of cases we have received no more recent information than contained in their article, and this is indicated by (S.N. 1919) after a record.

For all general considerations and details we refer readers to our main report now published separately.

Dates in brackets indicate that breeding had not been proved by that date. X indicates a water whose name it is desired shall not be published. In the list of informants the names appearing in italics refer to those who have reported on a considerable number of waters.

TOTAL PAIRS :—c. 75-100.

Occupied sites, 40.

No 1931 information, 23.

Not in 1931, 29.

Breeding not proved, 15.

TOTAL SITES, 107.

ABERDEENSHIRE. Estimated 2 pairs.

				Pairs 1931.	Details of Previous Years.
(a) <i>Occupied Waters.</i>					
Loch Davan	...	...	...	1	(Seen 1927/28.)
Loch of Strathbeg	...	...	...	1	c. 1920. Annually since.
(c) <i>Not in 1931.</i>					
Loch Kinord	...	...	...	—	(Seen 1927/28); 1929

ANGUS. Estimated 9 pairs.

(a) <i>Occupied Waters.</i>					
Balgavies Loch	...	...	...	1	
Duns Dish	...	...	...	1	1915.
Kinnaird Castle	...	...	...	1	1916. Annually since.
Loch of Lintrathen	...	...	...	2	1924/25.
Lochindores	...	...	...	1	1923/27.
Rescobie Loch	...	...	...	2 to 4	1895.
(b) <i>No 1931 information.</i>					
Loch Fithie	...	...	...	—	1900, prob. 1923.
Lundie Loch	...	...	...	—	1912.
(c) <i>Not in 1931.</i>					
Monikie Reservoir	...	...	...	—	1916.
Thripley	...	...	...	—	1 pr. 1920/22. 2 prs. 1923/26.
(d) <i>Breeding not proved.</i>					
Long Loch	...	...	...	—	1923.

[ARGYLLSHIRE.]

Marion Campbell, of Kilberry, saw a pair courting in a sheltered cove about three miles south of Kilberry on June 18th, 1926.]

AYRSHIRE. Estimated 3 pairs.

(a) <i>Occupied Waters.</i>					
Martnaham Loch	...	...	...	3	1927.
(b) <i>No 1931 information.</i>					
Kilbirnie Loch	...	...	...	—	1912 and at- tempted annu- ally since (S.N. 1919).
(c) <i>Not in 1931.</i>					
Belston Loch	...	...	...	—	"Several years ago."
Culzean Pond	...	...	...	—	do.
(d) <i>Breeding not proved.</i>					
Loch Fergus	...	...	...	—	1931.

BERWICKSHIRE. Estimated 0 pairs.

(c) <i>Not in 1931.</i>					
Hirsell Loch	...	...	...	—	1914 only.
Hoselaw Loch	...	...	...	—	Nested fairly re- cently.
(d) <i>Breeding not proved.</i>					
Duns Castle Loch	...	...	...	—	1905 or 1906.

CLACKMANNANSHIRE. Estimated 1 pair.

(b) <i>No 1931 information.</i>					
Gartmorn Dam	...	...	...	—	1906/08. 1911.

DUMBARTONSHIRE. Estimated 0 to 2 pairs.
Pairs
1931.

Details of
Previous Years.

(b) *No 1931 information.*

Baker Loch	...	...	...	—	1916 ; prob. 2 prs. 1919; 2 prs. 1920; 3 prs. 1921.
Gilshaw Loch	...	...	...	—	1920 ; 1921.

(c) *Not in 1931.*

Cochno Loch	...	...	...	—	(Seen 1900); 1911; 1913/20 ; none 1921.
Edinbarnet Loch...	...	...	...	—	1915 ; 1920 ; none 1921.
Fyn Loch	...	...	...	—	1897 ; 1918; (1919?); 1920-21.

(d) *Breeding not proved.*

Loch Humphrey	—	c. 1886 ; 1920 ; none 1931.
---------------	-----	-----	-----	---	--------------------------------

DUMFRIESSHIRE. Estimated 3 pairs.

(a) *Occupied Waters.*

Castle Loch, Lochmaben	...	...	...	2	1891 ; Increase 1903/4 to 10 prs. in 1910 ; 1 pr. 1930.
Mill Loch, Lochmaben	...	...	...	1	1905 ; 1918.

EAST LoTHIAN. Estimated 0 pairs.

(d) *Breeding not proved.*

Pressmennan Loch	—	1905.
------------------	-----	-----	-----	---	-------

FIFESHIRE. Estimated 17 pairs.

(a) *Occupied Waters.*

Kilconquhar Loch	...	...	...	4	2 prs. 1916, in- creasing to 4 prs.
Kinghorn Loch	...	...	...	1	—
Lindores Loch	...	...	...	8	c. 1880 ; annually since.
Loch Fitty	...	...	...	1	1902 ; 1910.
Loch Gelly	...	...	...	1	(Seen 1881/95) ; 1896 ; annually since.

Luscar Pond	2	—
-------------	-----	-----	-----	---	---

(c) *Not in 1931.*

Black Loch, Lindores	...	...	...	—	1904 only.
Camilla Loch	...	...	...	—	2 prs. 1906.

KINROSS. Estimated 8 pairs.

(a) *Occupied Waters.*

Loch Leven	8	(Seen in 'eighties and subsequent- ly); 6 prs. 1908.
------------	-----	-----	-----	---	--

KIRKCUDBRIGHTSHIRE. Estimated 6 pairs.

(a) *Occupied Waters.*

Dee River, between Parton and Cross Michael	1	1918 ; annually since.
--	-----	-----	-----	---	---------------------------

				Pairs 1931.	Details of Previous Years.
KIRKCUDBRIGHTSHIRE — <i>continued.</i>					
	Kinder Loch	...	...	1 to 2	1920 or 1921.
	Loch Patrick	...	...	1	—
	Woodhall Loch	...	...	1	—
	X	...	...	1	1922.
(c)	<i>Not in 1931.</i>				
	Loch Ken	...	...	—	1922; 1927.
(d)	<i>Breeding not proved.</i>				
	Carlingwark Loch	...	...	—	1931.
	Lochaber Loch	...	...	—	1931.
	Loch Auchenreoch	...	...	—	Not 1931.
	Loch Erncrogo	...	...	—	do.
	Loch Roan	...	...	—	do.
	Loch Stroan	...	...	—	do.
(e)	<i>Waters holding non-breeding Birds.</i>				
	Lochrutton Loch	...	...	—	1931, 5 ad.
	Milton Loch	...	...	—	1931, 3 ad.
LANARKSHIRE. Estimated 1 to 2 pairs.					
(b)	<i>No 1931 information.</i>				
	Bishop Loch	...	...	—	c. 1886 1 or 2 prs. regularly. (S.N. 1919).
	Woodend Loch	...	...	—	c. 1906 Nests prob- ably most sea- sons. (S.N.1919).
MIDLOTHIAN. Estimated 5 pairs.					
(a)	<i>Occupied Waters.</i>				
	Bavelaw Reservoir, Balerno	...	...	1	1916.
	Gladhouse Reservoir	...	...	1	(Probably 1911); 1912 and subse- quent years; 2 prs. 1930.
	Thriepmuir Reservoir	...	...	1	c. 1910; 1917; 1929.
	Cobbinshaw Reservoir	...	...	2	(1 pr. seen 1905); 3 prs. 1907.
MORAYSHIRE. Estimated 0 pairs.					
(c)	<i>Not in 1931.</i>				
	Loch Spynie	...	...	—	1 pr. 1913/29.
PEEBLESSHIRE Estimated 0 pairs.					
(d)	<i>Breeding not proved.</i>				
	Portmore Loch	...	...	—	1912.
PERTHSHIRE. Estimated 15 to 16 pairs.					
(a)	<i>Occupied Waters.</i>				
	Clunie Loch	...	...	1	1918.
	Dupplin Loch	...	...	2	1 pr. 1903/06; 2 prs. 1907/09; 3 prs. 1910/18; prob. 4 prs. 1919.
	Lake of Menteith	...	...	1	'Eighties; 1896; + 2 prs. 1917; 6 prs. c. 1923, some killed; 2 1930.

				Pairs 1931.	Details of Previous Years.
PERTHSHIRE — <i>continued</i> .					
	Loch Lubnaig	...	...	1	1912.
	Loch Ruskie	...	...	1	
	Marlee Loch	...	...	2	1912.
	Methven	...	...	1	Yearly.
	Monzievaird, Ochtertyre	...	...	1	c. 1911; increased to 3 prs. ; 1 pr. 1930.
	Rae	...	...	1	—
	Stormont	...	...	2 to 3	—
(b) <i>No 1931 information.</i>					
	Drummond Castle Loch	...	...	—	(Seen 1906.)
	Dunkeld (near)	...	...	—	1905.
	Loch Doine	...	...	—	1927.
	Ordie	...	...	—	1920.
	Snaigow	...	...	—	2 prs. 1904.
(c) <i>Not in 1931.</i>					
	Butterstone Loch	...	...		1910.
	Craiglush	...	...		—
	Loch o' the Lowes	...	...		1877.
	Redmyre Loch	...	...	—	1912, '13, '16, '17 and prob. since.
RENFREWSHIRE. Estimated under 5 pairs.					
(b) <i>No 1931 information.</i>					
	Brother Loch	...	...	—	1897 } Breeds regu-
	Harelaw Dam	...	...	—	1889 } larly; not
					more than
					2 prs. on
					each (S.N.
					1919).
	Kilmacolm	...	...		1921
	Little Loch	}	...	—	Has nested occa-
	Long Loch				
	Walton Dam				
					1919).
(d) <i>Breeding not proved.</i>					
	Castle Semple Loch	...	...	—	—
[ROSS-SHIRE.					
1924, May, a single bird on Loch Achilty near Strathpeffer, about middle of month. Not seen in 1930. D. B. Kirke.]					
ROXBURGHSHIRE. Estimated 0 pairs.					
(b) <i>No 1931 information.</i>					
	X	...	...	—	1908 and subse-
					quently (S.N.
					1919).
SELKIRKSHIRE. Estimated 0 pairs.					
(c) <i>Not in 1931.</i>					
	Cauldshiels	...	...	—	1916/20; not after 1920.
	Clearburn	...	...	—	1910; 1919; (seen 1929/30).
(d) <i>Breeding not proved.</i>					
	St. Mary's Loch	...	...	—	Not 1931.

	Pairs 1931.	Details of Previous Years.
STIRLINGSHIRE. Estimated 2 pairs.		
(a) <i>Occupied Waters.</i>		
Bardowie Loch	1	1913 or 1914; 2 prs. since (S.N. 1919).
(b) <i>No 1931 information.</i>		
Carbeth Loch	—	Nests (S.N. 1919).
Carron Dam	—	1890.
Loch Coulter	—	1893.
(c) <i>Not in 1931.</i>		
Craigallian Loch	—	Nests (S.N. 1919).
Loch Ardingning	—	Not since 1911.
WEST LoTHIAN. Estimated 3 pairs.		
(a) <i>Occupied Waters.</i>		
Linlithgow Loch	3	3 prs. 1929 and 1930.
WIGTOWNSHIRE. Estimated 1 pair.		
(a) <i>Occupied Waters.</i>		
Mochrum Loch	1?	1897-1930: poss. 1 pr. 1931.
(c) <i>Not in 1931.</i>		
Black Loch, Castle Kennedy ...	—	—
Boyoch, Isle of Whithorn ...	—	—
Castle Loch, Mochrum	—	1898-1930: Max. 4 prs.
Cults Loch, Castle Kennedy ...	—	—
White Loch, Castle Kennedy ...	—	—
White Loch, Ravenstone ...	—	—
White Loch of Myreton, Monreith	—	1896-1930.
(d) <i>Breeding not proved.</i>		
Soulseat Loch	—	Not 1931.

INFORMANTS.—*W. B. Alexander, V. R. Balfour-Browne, J. Bartholomew, Hon. Mr. Justice Bateson, Miss E. V. Baxter, F. Belford, F. Beveridge, R. O. Blyth, H. Bouse, Mrs. C. M. Bragge, R. H. Brown, C. Buchanan, Bruce Campbell, Marion Campbell of Kilberry, G. Cassidy, Miss J. Clark, T. Cockburn, E. Cohen, F. Cowan, J. D. Dundas, H. T. Dunsmuir, J. A. Elphinstone, Admiral Sir Arthur Farquhar, Lt.-Com. E. J. Fergusson, J. Fergusson, W. S. Fotheringham, J. C. Gentles, D. Gordon, J. G. Gordon, Mrs. Seton Gordon, J. D. P. Graham, R. Graham, Lt.-Col. T. W. S. Graham, D. Hamilton, H. J. Hewitt, R. Inglis, Sir Thomas W. H. Inskip, Inverleith Field Club, R. Johnston, D. B. Kirke, J. G. Laidlaw, J. C. Laidlay, Miss E. P. Leach, Lord Leven, J. P. McClellan, W. McConachie, W. Mackenzie, D. McKerchar, W. Mair, J. Mann, W. Marshall, Sir Herbert Maxwell, A. H. Meiklejohn, A. Mills, M. R. Morley, C. K. Murray, Lt.-Col. Huntley-Nicholson, C. Oldham, D. Paterson, E. R. Paton, J. Patrick, J. R. Pelham-Burn, A. M. Porteous (Jnr.), J. Purves, P. G. Ralfe, W. Rennie, P. Rickman, Miss L. J. Rintoul, J. R. Ritchie, C. Robertson, D. Robertson, D. J. Samson, P. W. Sandeman, Rev. W. Serle, W. Serle (Jnr.), Miss E. C. Sharp, A. J. Smith, F. Sorrell, The Countess of Southesk, H. G. Spragge, Maj. A. Stables, Lord Stair, W. J. Stirling, Miss A. V. Stone, G. Waterston, J. G. Wilson.*

BIRDS OF INNER LONDON.

BY

A. HOLTE MACPHERSON.

ADDITIONAL SPECIES.

THE following may be added to the list published in this magazine in 1929 (Vol. XXII., pp. 222-244) and the subsequent additions (Vol. XXIII., p. 266, and Vol. XXIV., p. 323).

SCANDINAVIAN LESSER BLACK-BACKED GULL (*Larus f. fuscus*).—Mr. L. Parmenter informs me that he had a good view of one of these birds on December 23rd, 1932, as it flew up and down by the Thames Embankment near the Tate Gallery. It was in adult plumage, with black mantle and wings. Mr. Parmenter could not see its legs, but was able to satisfy himself that the bird was not a Great Black-backed Gull, as it was similar in size to several Herring-Gulls which passed close to it.

ADDITIONAL NOTES IN 1932.

The capture of a Puffin (*Fratercula arctica*) in Finsbury Circus Gardens has already been recorded in this volume (p. 259).

For the last few years a party of Jays (*Garrulus g. rufitergum*) has frequented the grounds of Holland House, and there is no doubt that a pair of these birds nested somewhere in the neighbourhood in 1932. Col. R. Meinertzhagen reported that a pair of Jays arrived in Kensington Park Gardens on April 29th. They commenced to build a nest about 15 feet from the ground in a thorn tree a few feet from the road. The nest attracted attention by its exposed position and a letter in *The Times* from an inhabitant of Ladbroke Square gave it further publicity. The birds deserted it about May 12th, no egg having been laid. Shortly after this I left London, but on my return in July I saw a family of three young Jays on several occasions in Holland House grounds. They were able to take short flights. Where their nest was I did not discover; there must be suitable sites in various private gardens in the vicinity.

On May 4th, I got a good view of a Hawfinch (*Coccothraustes c. coccothraustes*) in the grounds of Holland House. I only know of three previous occurrences of this species in Inner London during the last fifty years.

Major A. H. Daukes informs me that a Goldfinch (*Carduelis c. britannica*) visited his garden in Egerton Terrace, Chelsea,

on April 20th, and a Lesser Redpoll (*C. l. cabaret*) on February 27th and a few subsequent days.

On April 2nd, Mrs. E. MacAlister saw a Brambling (*Fringilla montifringilla*) bathing below the fountains at the end of the Long Water in Kensington Gardens; and Mr. R. W. Hayman, of the Natural History Museum, tells me that on April 11th he saw two Bramblings at the same spot.

A pair of Marsh-Tits (*Parus p. dresseri*) was seen on several occasions in the early part of the year in Cheyne Gardens, Chelsea, by Mr. J. Sladen Wing, who tells me that in March the birds were seen there also by Col. W. A. Payn. It is a very rare species in Inner London.

On April 26th, Mr. C. L. Collenette noticed a male Pied Flycatcher (*Muscicapa h. hypoleuca*) in the grounds of the Natural History Museum. The bird was seen also by Mr. A. H. Bishop and others.

Dr. G. Carmichael Low observed a male Redstart (*Phœnicurus ph. phœnicurus*) on May 3rd in Kensington Gardens.

Mr. Hinton, the bird-keeper in St. James's Park, reports that a Green Woodpecker (*Picus v. virescens*) was frequently seen there from the end of August till late in November.

A Lesser Spotted Woodpecker (*Dryobates m. comminutus*) spent most of April 26th and 27th calling from the top of an ash in Campden Hill Square. I did not hear or see it again.

On February 8th an adult drake Scaup (*Nyroca m. marila*) appeared on the Serpentine and remained for a few days. This was a different bird to the Scaup which has been described by Dr. G. Carmichael Low (Vol. XXV., p. 304).

In February, the Round Pond was visited by a duck which appeared to be a hybrid between a Scaup and a Pochard. In colouring, this bird had the general appearance of an adult drake Scaup, but its back had the shade and markings of a drake Pochard. It also had the receding forehead characteristic of the latter species. Its irides were orange.

Early in October, a Cormorant appeared in St. James's Park (*Phalacrocorax c. carbo*) which the keeper told me was a wild bird. It had a few days before come to the lake with two young Cormorants bred in the Park, accompanying them on their return from one of their daily flights to the Thames. The stranger appeared to be quite at home.

On March 9th a Great Crested Grebe (*Podiceps c. cristatus*) in full breeding plumage took up its position on the narrow strip of water between the island and the north bank of the Serpentine. It remained there till May 6th, and, during the whole of this period, was never seen more than a few yards

from the same spot. It showed no sign of injury. Once or twice it was seen to dive, but generally appeared to be asleep.

A Whimbrel (*Numenius ph. phæopus*) flew over Major Dauke's house on August 14th, calling loudly.

A Woodcock (*Scolopax r. rusticola*) was found alive in St. James's Street on January 26th and taken to Mr. Hinton. It had an injured bill and died.

Mr. E. M. Nicholson informs me that he saw a Common (or Arctic) Tern flying over Whiteley's on September 22nd. It was flying S.E. In *The Field* (January 14th, 1933) Mr. G. H. Gush states that in September last he saw a Tern, which from his description clearly belonged to one of these species at the Round Pond, Kensington Gardens. He has informed me that the date was September 23rd. This was very likely the bird seen by Mr. Nicholson, and was probably a Common Tern. I have never identified an Arctic Tern in the neighbourhood of London.

Mr. L. Parmenter saw a Great Black-backed Gull (*Larus marinus*) flying over the Thames near the Tate Gallery on November 8th, and two birds of this species at the same place on the following day.

The bird-keeper in St. James's Park found a Landrail (*Crex crex*) on November 1st. It was caught in a wire enclosure but was uninjured and flew away when released.

THE " BRITISH BIRDS " MARKING SCHEME.*

PROGRESS FOR 1932.

BY

H. F. WITHERBY.

NUMBER OF BIRDS RINGED.

			<i>Trapped.</i>	<i>Nestlings.</i>	<i>Total.</i>	
In 1932	...	...	7,643	22,950	30,593	
In 1909	...	2,171		In 1920	...	5,276
„ 1910	...	7,910		„ 1921	...	8,997
„ 1911	...	10,416		„ 1922	...	9,289
„ 1912	...	11,483		„ 1923	...	12,866
„ 1913	...	14,843		„ 1924	...	18,189
„ 1914	...	13,024		„ 1925	...	18,233
„ 1915	...	7,767		„ 1926	...	23,432
„ 1916	...	7,107		„ 1927	...	21,625
„ 1917	...	6,926		„ 1928	...	24,479
„ 1918	...	5,937		„ 1929	...	25,243
„ 1919	...	3,578		„ 1930	...	28,610
				„ 1931	...	29,554
Grand Total ...			...	...	347,548	

FOR the fifth year in succession I have the pleasure to record a larger number of birds ringed under our scheme than in any previous year.

It is also satisfactory to note that the increase in 1932 over 1931 is largely in trapped birds, which have risen to one-fourth of the total for the year. Some ringers have confined themselves to trapping, and many others have trapped as many or more than they have ringed as nestlings. On the other hand the numbers ringed of a few of the larger non-passerine birds, which usually yield valuable returns, have unfortunately fallen.

* For previous Reports see Vol. III., pp. 179-182, for 1909; Vol. IV., pp. 204-207, for 1910; Vol. V., pp. 158-162, for 1911; Vol. VI., pp. 177-183, for 1912; Vol. VII., pp. 190-195, for 1913; Vol. VIII., pp. 161-168, for 1914; Vol. IX., pp. 222-229, for 1915; Vol. X., pp. 150-156, for 1916; Vol. XI., pp. 271-276, for 1917; Vol. XII., pp. 96-100, for 1918; Vol. XIII., pp. 237-240, for 1919; Vol. XIV., pp. 203-207, for 1920; Vol. XV., pp. 232-238, for 1921; Vol. XVI., pp. 277-281, for 1922; Vol. XVII., pp. 231-235, for 1923; Vol. XVIII., pp. 260-265, for 1924; Vol. XIX., pp. 275-280, for 1925; Vol. XX., pp. 236-241, for 1926; Vol. XXI., pp. 212-219, for 1927; Vol. XXII., pp. 253-258 for 1928; Vol. XXIII., pp. 258-263, for 1929; Vol. XXIV., pp. 234-244, for 1930; Vol. XXV., pp. 286-291 for 1931.

Dr. Moon has once more ringed over 4,000, by far the largest total. This includes the prodigious number of eleven hundred and eight Lapwings, nearly half the total number of these birds ringed in the year. Other notable figures are Song-Thrush (807), Blackbird (483), Starling (275) and Curlew (95).

Mr. H. W. Robinson has ringed over two thousand nestlings, chiefly Lesser Black-backed Gulls and four species of Tern, besides twenty-four Woodcock and fifty Swallows.

The Oxford Ornithological Society, who come third in total, are again easily first in trapped birds, of which they have ringed a very large number. Altogether the Oxford list, consisting of 63 species, is the most varied of all and includes a scarce migrant—the Barred Warbler—and an adult Barnacle-Goose, both caught at Holy Island; Skuas and other northern birds ringed as nestlings in Scotland; Redwings and Bramblings, besides many Starlings and other birds caught by special efforts at night, and large numbers trapped by more ordinary methods.

Mr. Boyd's total is very large considering it consists mainly of Passeres and includes nearly as many trapped as nestlings. The most remarkable item in it is the Swallow (426), curiously enough the same total as last year.

Lord Scone has not been able to do so much trapping this year, but he has nevertheless a fine total, including such useful species as Woodcock (103), Mallard (143) and Land-Rail (29).

Mr. Mayall's list is almost entirely made up of Passeres and includes Nightingale (137), Linnet (106), Swallow (216). Mr. Garnett has a large total of Sandwich Tern (660) and Red-backed Shrike (10). Mr. Williams has ringed mostly Passerine nestlings of the larger species. Items which may be mentioned from various lists are: Mr. E. Cohen 23 Sheld-Duck; Mr. J. Cunningham 227 Sandwich and 28 Roseate Terns; Miss Sharp 129 Shags, 92 Razorbills; Mr. R. H. Brown 11 Buzzards, 24 Herons; Messrs. Duncan 66 Woodcock; Rugby School 38 Carrion-Crows; Mr. J. F. Thomas 244 Swallows; Mr. J. F. Wynne 19 Willow-Wrens trapped; Messrs. Oakes and Battersby 31 Lesser Redpolls trapped; Mr. J. Bartholomew 35 Kingfishers; Mrs. Hodgkin 100 Gannets, 83 Kittiwakes; Mr. Gillman 121 Rooks; Col. Pollitt 53 Herons; Miss Higginbotham 112 Pied Flycatchers.

Some ringers, who contributed considerable numbers in previous years, have been able to do very little this year for various reasons, but a number of new ringers have joined us and some of these have made excellent totals. The increase in the number of ringers has necessitated omitting from the list those who have ringed less than twenty-five birds.

It will be seen that the Great and Blue Tits have been added to the list of species ringed and that considerable numbers of these birds have been trapped and ringed this year. These have mostly been ringed for various special objects, and I do not think much of value will be learnt by trapping and ringing such "stay-at-home" birds in a casual way. To get really valuable results a number of trapping stations at not too great intervals should be arranged if possible and, in conjunction with trapping, birds should be caught at their nesting places. Even with difficult and intensive work of this kind it is probable that results would be insufficient to throw much light on such questions as the composition of the flocks, their range and the spread of the birds in the breeding-season. In this connexion I feel sure that the use of coloured rings, which can be identified by observation in the field, would be of the greatest value. In using such rings to get accurate results it is highly necessary to keep very careful and detailed records of each individual bird ringed and each time it is seen and with what other ringed birds it is associated. Indeed, the keeping of such records would be a laborious task, but some interesting results should be obtained if the work were carried on all through the year in a not too confined area. Celluloid rings, which appear to be suitable for small birds and are easily put on, can be obtained in a good range of colours from The Green Rigg Works, 45, Empress Avenue, Woodford Green, Essex. Mr. Stuart Boardman informs me that he now has records of these rings being worn by Great or Blue Tits for two years, one year and eight months, and one year and four months, and still being in perfect condition.

Each bird should also bear a *British Birds* ring as a check, and also in order that it may be reported should it come into another's hands. Those who are in a position to undertake such work should study Mr. Burkitt's paper on the Robin (see Vol. XVII., pp. 294-303; XVIII., pp. 97-103, 250-7; XIX., pp. 120-4; XX., pp. 91-101).

Recoveries have kept up in numbers and interest, and considerable increases have been recorded in some species, which have been trapped in large numbers. The scheme may be said to have made steady progress during the year and to have accumulated a mass of valuable data. Miss Leach has again spent a great deal of time, for which we must all be very grateful, in checking and getting accurate details of the large number of recoveries and in arranging all the records connected with the scheme.

NUMBER OF BIRDS "RINGED."

	<i>Trapped.</i>	<i>Nest- ling.</i>	<i>Total.</i>		<i>Trapped.</i>	<i>Nest- ling.</i>	<i>Total.</i>
H. J. Moon ...	141	3,998	4,139	F. R. Barlow ...	111	—	111
H. W. Robinson ...	4	2,051	2,055	Sir S. Bilsland ...	12	94	106
Oxford Orn. Soc. ...	1,535	405	1,940	Miss Staunton ...	18	87	105
A. W. Boyd ...	717	988	1,705	R. S. Broke ...	80	19	99
Lord Scone ...	160	1,241	1,401	J. Hepburn ...	98	—	98
A. Mayall ...	196	1,142	1,338	A. G. Haworth... ..	7	90	97
R. M. Garnett ...	75	1,047	1,122	Cheltenham Coll. ...	10	87	97
R. G. Williams ...	108	849	957	R. J. Spittle ...	6	86	92
E. Cohen ...	335	386	721	Sanctuary Club.			
P. Morshead ...	220	412	632	Cambs. ...	53	37	90
J. Cunningham... ..	46	543	589	D. Waterhouse... ..	52	34	86
Miss Sharp ...	82	461	543	W. D. Shaw ...	76	9	85
London N.H. Soc. ...	241	263	504	H. S. Greg ...	—	83	83
R. H. Brown ...	—	502	502	J. Ellis ...	2	76	78
W. & A. Duncan ...	30	378	408	W. M. Congreve ...	7	69	76
Rugby School ...	130	217	347	Miss Fraser ...	1	74	75
Mrs. Hodgkin ...	—	344	344	Miss Bickersteth ...	49	23	72
J. F. Thomas ...	51	270	321	H. F. Witherby ...	—	69	69
Perths. N.H. Soc. ...	316	—	316	P. Chance ...	—	69	69
J. F. Wynne ...	255	50	305	H. & P. Davis ...	19	49	68
G. Brown ...	62	242	304	H. Elder ...	29	39	68
C. Oakes and E.				K. R. Ashby ...	9	58	67
Battersby ...	46	253	299	Duchess of			
N. Rollin ...	290	4	294	Bedford ...	65	—	65
Sutton Valence				G. H. Stock ...	7	57	64
School ...	3	291	294	Mrs. Evetts ...	25	38	63
J. Bartholomew ...	16	277	293	C. B. Ticehurst... ..	62	—	62
M. L. Pilkington ...	7	275	282	Miss Macmillan ...	1	59	60
St. Edmund's S. ...	12	260	272	E. Blezard ...	—	60	60
Miss Ferrier ...	6	265	271	M. North ...	—	59	59
W. A. Cadman ...	79	179	258	Mrs. Morley ...	—	56	56
A. H. Eggeling... ..	70	172	242	M. Meynell ...	—	55	55
R. Martinson ...	58	179	237	A. Jameson ...	1	54	55
F. J. Ramsay ...	238	—	238	T. Wallace ...	1	53	54
H. Gillman ...	16	213	229	T. Kirkwood ...	22	29	51
E. Peake ...	199	29	228	S. Boardman ...	50	—	50
A. Morrison ...	104	122	226	R. Fitter ...	38	12	50
G. P. Pollitt ...	—	224	224	Mrs. Mackenzie ...	—	47	47
Inverleith F.C....	7	212	219	E. Paget-Tomlin-			
Bootham School ...	46	170	216	son ...	—	44	44
G. Marples ...	166	40	206	D. J. Robertson ...	11	33	44
F. A. Craine ...	57	142	199	M. W. Willson ...	—	43	43
J. K. Graham ...	2	189	191	Miss Carter ...	—	40	40
Duke of Grafton ...	51	132	183	F. Offen ...	16	22	38
A. J. Davidson... ..	54	126	180	A. Johnstone ...	27	9	36
E. G. Holt ...	69	88	157	H. Bamford ...	2	34	36
Miss Higgin-				T. Perrin ...	13	21	34
botham ...	3	152	155	Miss Russell ...	—	33	33
Mrs. Wilson ...	24	125	149	Clifton College ...	—	33	33
E. O. Lester ...	139	1	140	Miss Leach ...	—	32	32
J. Barnes ...	48	82	130	F. Mitchell ...	—	31	31
J. M. Fisher ...	110	18	128	J. G. Davis ...	1	29	30
D. K. Bryson ...	10	106	116	R. O. Blyth ...	6	24	30
H. Whistler ...	85	28	113	A. G. Tayler ...	—	28	28
Barnard Castle S. ...	54	59	113	G. Wheeler ...	2	24	26

NUMBERS OF EACH SPECIES "RINGED."

RECOVERED.

	'09-'31	1932 Trapped.	1932 Nest- lings.	1932 Total	Grand Total.	of those ringed 1909-31	Per- centage
Raven ...	75	—	4	4	79	6	8.0
*Crow, Carrion ...	430	2	111	113	543	25	5.8
Rook ...	2023	48	289	337	2360	62	3.0
Jackdaw ...	1345	11	136	147	1492	55	4.0
*Magpie ...	322	2	68	70	392	15	4.6
Jay ...	264	6	11	17	281	12	4.5
Starling...	21879	1700	941	2641	24520	948	4.3
Greenfinch ...	10718	987	386	1373	12091	473	4.4
*Goldfinch ...	165	35	7	42	207	4	2.4
Redpoll, Lesser	319	31	7	38	357	3	0.9
Linnet ...	5878	37	327	364	6242	38	0.6
Bullfinch ...	801	4	85	89	890	8	1.0
Chaffinch ...	11626	613	454	1067	12693	312	2.6
Brambling ...	57	17	—	17	74	—	—
Sparrow, Tree ...	1133	8	103	111	1244	37	3.2
Bunting, Yellow	2678	87	119	206	2884	149	5.5
Bunting, Reed...	1056	24	75	99	1155	34	3.2
Lark, Sky ...	2833	9	29	38	2871	29	1.0
Pipit, Tree ...	1280	3	72	75	1355	4	0.3
Pipit, Meadow ...	2718	15	113	128	2846	34	1.2
Wagtail, Yellow	511	1	111	112	623	1	0.1
Wagtail, Grey ...	490	1	36	37	527	1	0.2
Wagtail, Pied ...	3261	27	235	262	3523	49	1.5
Tit, Great ...	1363	341	25	366	1729	89	6.5
Tit, Blue ...	1433	588	40	628	2061	136	9.4
Shrike, R.-backed	619	—	33	33	652	2	0.3
Flycatcher, S. ...	2793	8	63	71	2864	7	0.2
*Flycatcher, Pied	537	1	133	134	671	2	0.3
Chiffchaff ...	573	9	12	21	594	2	0.3
Warbler, Willow	7903	91	60	151	8054	34	0.4
Warbler, Wood	872	—	17	17	889	2	0.2
Warbler, Reed ...	734	—	36	36	770	4	0.5
Warbler, Sedge...	800	1	91	92	892	1	0.1
Warbler, Garden	758	5	61	66	824	1	0.1
Blackcap ...	517	—	50	50	567	—	—
Whitethroat ...	2882	9	26	35	2917	13	0.4
Thrush, Mistle ...	2361	30	234	264	2625	36	1.5
Thrush, Song ...	37225	289	3176	3465	40690	543	1.4
Redwing ...	63	12	—	12	75	—	—
Ouzel, Ring ...	376	—	10	10	386	3	0.7
Blackbird ...	27604	611	2364	2975	30579	889	3.2
Wheatear ...	1199	3	59	62	1261	24	2.0
Whinchat ...	1305	3	52	55	1360	8	0.6
Stonechat ...	545	4	29	33	578	3	0.5
Redstart ...	1252	5	58	63	1315	5	0.4
Nightingale ...	496	—	151	151	647	2	0.4
Redbreast ...	11592	600	504	1104	12696	761	6.5
Sparrow, Hedge	7460	429	314	743	8203	434	5.8
Wren ...	3167	27	42	69	3236	8	0.2
Dipper ...	685	1	58	59	744	6	0.8
Swallow ...	22943	125	2103	2228	25171	189	0.8
Martin ...	8452	54	356	410	8862	52	0.6
Martin, Sand ...	3909	29	6	35	3944	9	0.2

* Of species so marked no record was kept of the number ringed from 1913 to 1920.

NUMBERS OF EACH SPECIES "RINGED."							RECOVERED.	
	1909-'31	1932 Trapped.	1932 Nest-lings.	1932 Total.	Grand Total.		of these ringed 1909-'31	Percentage
*Swift ...	590	11	9	20	610	38		6.4
Nightjar ...	136	—	15	15	151	2		1.4
Kingfisher ...	128	—	55	55	183	7		5.4
Wryneck ...	329	—	10	10	339	6		1.8
Cuckoo ...	406	1	21	22	428	14		3.4
*Owl, Little ...	283	9	30	39	322	25		8.8
Owl, Long-eared	122	1	17	18	140	6		4.9
Owl, Barn ...	251	3	41	44	295	21		8.3
Owl, Tawny ...	508	3	28	31	539	33		6.4
Peregrine Falcon	41	—	5	5	46	7		17.0
*Merlin ...	138	—	15	15	153	32		23.0
Kestrel ...	494	—	33	33	527	56		11.3
*Buzzard ...	131	—	32	32	163	8		6.1
Hawk, Sparrow	283	1	15	16	299	45		15.9
Heron, Common	1116	—	121	121	1237	103		9.2
Sheld-Duck ...	187	2	42	44	231	12		6.4
Mallard ...	4132	105	206	311	4443	615		14.8
Teal ...	877	4	1	5	882	102		11.6
Wigeon ...	170	—	7	7	177	17		10.0
Duck, Tufted ...	78	—	—	—	78	9		11.5
Eider ...	220	1	102	103	323	7		3.1
Cormorant ...	973	—	56	56	1029	173		17.7
Shag ...	1189	24	124	148	1337	121		10.1
Gannet ...	1268	—	120	120	1388	40		3.1
Shearwater, Manx	665	4	—	4	669	17		2.5
Wood-Pigeon ...	1697	2	111	113	1810	71		4.1
Dove, Stock ...	281	5	16	21	302	7		2.4
Dove, Turtle ...	420	20	12	32	452	40		9.5
Stone-Curlew ...	95	—	14	14	109	4		4.2
Oyster-Catcher...	644	1	68	69	713	26		4.1
Plover, Ringed...	674	—	73	73	747	11		1.6
Plover, Golden...	135	—	10	10	145	2		1.4
Lapwing ...	18275	3	2488	2491	20766	409		2.2
Sandpiper, C. ...	587	—	20	20	607	2		0.3
Redshank ...	1141	—	141	141	1282	48		4.2
Curlew, Common	1413	—	180	180	1593	65		4.6
Snipe, Common	892	3	86	89	981	55		6.1
Woodcock ...	2535	4	207	211	2746	188		7.4
Tern, Sandwich	5790	—	1420	1420	7210	70		1.2
Tern, Common...	9485	—	858	858	10343	179		1.8
Tern, Arctic ...	507	2	305	307	814	1		0.2
Tern, Little ...	316	—	24	24	340	2		0.6
Gull, B.-headed	12175	18	97	115	12290	537		4.4
Gull, Common ...	1021	15	61	76	1097	28		2.7
Gull, Herring ...	2259	2	374	376	2635	37		1.6
Gull, L. Blk.-bkd.	6365	—	787	787	7152	222		3.4
Gull, G. Blk.-bkd.	255	3	3	6	261	5		1.9
Kittiwake ...	536	5	92	97	633	6		1.1
Razorbill ...	776	37	60	97	873	15		1.9
*Guillemot ...	1084	6	2	8	1092	17		1.5
Puffin ...	2303	34	135	169	2472	13		0.5
Rail, Land ...	204	—	29	29	233	3		1.4
Moor-Hen ...	1005	27	37	64	1069	15		1.4
Coot ...	93	2	5	7	100	6		6.4

OBITUARY.

THOMAS ALFRED COWARD.

1867-1933.

THOMAS ALFRED COWARD was born in Bowdon, a Cheshire suburb of Manchester, in January, 1867. There he spent his life, and there on January 29th he died with tragic suddenness from heart failure. Not only was he one of the best field naturalists in the north of England, but in the past thirty years no one has done more than he to arouse and encourage the study of animals as living creatures in Lancashire and Cheshire—and further afield. His forbears, who went to Lancashire from Roundway in Wiltshire about the beginning of the last century, must have derived from some well-marked local stock, for you may see his doubles in Devizes on any market-day. His father, Thomas Coward, interested in geology and botany, was a prominent member of the old Manchester Natural History Society and Hon. Curator of its museum, and from him his son inherited and acquired the love of wild creatures which became his ruling passion.

Educated at Brooklands School, Sale, and Owens College, Manchester, Coward entered the business of Messrs. Melland & Coward, a firm of bleachers, and there remained for nineteen years. But they were years of bondage, for he had no aptitude for commercial affairs, and when the business was merged in one of the big industrial combines he seized the opportunity to retire. Thereafter, when he had occasion to go to Manchester—for a meeting of the "Lit. and Phil.", or to work at the Museum—his short, thick-set, knickerbockered figure, topped by a cloth cap, was the antithesis of the conventional Manchester business man.

Something had to be done to supplement his private income. He had already published some papers in the *Zoologist*, and in journals of a more popular kind, and, in collaboration with an old schoolfellow, had in 1900 written the *Birds of Cheshire*; and, taking his courage in both hands, he decided to essay a living by writing on Natural History subjects. As the event proved, he succeeded where so many have failed. Some thirty years of life remained, and during that time his literary output was very large. The bulk of it was in the form of articles for magazines, the *Nineteenth Century*, the *Fortnightly*, the *New Review* among others, and for newspapers; as T.A.C. of the *Manchester Guardian* he was widely known. It was indeed mainly as journalist, lecturer and broadcast talker that he reached his public and became a



THOMAS ALFRED COWARD.
Photographed in August 1929 at the Altrincham Sewage
Farm by John Aimitage.

real educational force. Some of his newspaper articles were reprinted in one or other of his books, but most are buried in those dusty and inconvenient mausoleums, the newspaper files.

Birds were perhaps his favourite study, but he was interested in mammals and other groups of animals and in the folklore, history and traditions of his beloved Cheshire; but whether his subject was the habits of Horse-shoe Bats, Duck Decoys, a plague of Antler Moths on the Pennine moors, Geese in the Dee Estuary or Ancient Stone Crosses, whatever he wrote was readable and reliable, and free alike from technicalities and literary frills. His considerable output would have been impossible without trained powers of observation and much work in the field. His range was not limited to Cheshire and North Wales, and, although he was never in Ireland, his acquaintance with Britain extended from Shetland to Cornwall and from St. Kilda to Dungeness, whilst, with his wife, he made trips to Holland, the Camargue, the Pyrenees and Hungary to study birds. In spite of the pressure of journalistic work and the time spent in the field, he made opportunities for writings of a more permanent character. In 1910 he edited the *Vertebrate Fauna of Cheshire and Liverpool Bay*, to which he was also chief contributor; and afterwards, by reports to the Lancashire and Cheshire Fauna Committee, papers in the *Memoirs* of the Manchester Literary and Philosophical Society—he was President of that body in 1921-1922—and notes in *British Birds* and elsewhere, he kept the *Fauna* up-to-date. In 1912 he wrote a small work on migration for the Cambridge Manuals of Science and Literature and a chapter on that subject in Kirkman's *British Bird Book*. His *Birds of the British Isles and their Eggs*, first published in 1919, met the need for a simply-written but authoritative and well-illustrated work; it has had a larger circulation and done more to promote an interest in ornithology than any book of our time. Works of a more popular character were *Birds and their Young*, *Birds of the Wayside and Woodland*, *Birds and other Nature Problems*, *Bird Life at Home and Abroad*, and *Bird Haunts and Nature Memories*. It is impossible here to recapitulate all his notes in the ornithological journals, but of those contributed to *British Birds* the most important are: (with R. Newstead) Schlegel's Petrel in Cheshire (Vol. II.); Black Redstart nesting in South England (Vol. XVIII.); and several relating to Birds on the Altrincham Sewage Farm (*passim*). His friend Armitage's photograph of him at the sewage farm shows him in a characteristic attitude and

is an excellent likeness. He wrote several books on Cheshire topography and history and his *Picturesque Cheshire*, illustrated by the pen and ink drawings of his friend, Roger Oldham, went to three editions.

During the war Coward was Acting Keeper of the Manchester Museum, and in 1921 the University conferred upon him the degree of Master of Science in recognition of his services. He was a member of the Committee of Management and took an active part in the museum work, making the Dresser collection of bird-skins his especial care; indeed, he was at work in the bird-room only three days before his death. He was a Kingsley medallist of the Chester Society of Literature, Natural Science and Art, a Fellow of the Zoological and Entomological Societies, and M.B.O.U.

Coward was essentially a field man and an apt describer of what he was, who in his own sphere had few equals. Squabbles and inflexibilities of nomenclators perturbed him as little as hair-splitting niceties of taxonomists. His concern was perhaps rather with what animals did than with why they did it, and the more philosophical aspects of Natural History did not touch him deeply. The varied and sometimes conflicting theories of precisely how species have been evolved and such questions as the inheritance or otherwise of impressed characters interested him just as little, and he never really grasped how fundamentally the discoveries of Mendel and his successors have affected the outlook of naturalists to-day. His frankly anthropomorphic views on animal psychology were not acceptable to some, at any rate, of his friends.

A Bird Protectionist—albeit a sane one—he was a local secretary of the R.S.P.B. Collecting for the sake of collecting and killing for killing's sake were alike detestable to him, and he was a militant opponent of blood-sports. Essentially temperate in wrath, his anger was stirred by any tale of cruelty or injustice.

A hundred stories might be told of his love for his neighbour—in the wider, scriptural sense—but one must suffice. Years ago, a friend who lived alone in rooms at Knutsford was stricken by typhoid. Every day for more than a month, Coward, putting his work aside, devoted time he could ill spare to cycling the seven miles out, and back again, because the sick man itched for news of the countryside and to know how the spring migrants were coming in. C.O.

NOTES

MARSH-TIT NESTING IN STONE WALL.

IN an article on the Marsh- and Willow-Tits (*antea*, Vol. XXIV., p. 319), Mr. J. Walpole Bond stated that he had never seen or heard of a nest of a Marsh-Tit (*Parus palustris dresseri*) in masonry. It may, therefore, be of interest to record that I found such a nest some years ago in a stone wall in Blenheim Park, Woodstock, Oxfordshire. The entrance hole turned very slightly to the left and my hand would go in only as far as the base of the thumb. I could just touch the nearest eggs.

L. S. V. VENABLES.

FIRE-CRESTED WREN IN NORFOLK.

ON January 23rd, 1933, at Hemsby, I watched a Fire-crested Wren (*Regulus ignicapillus*). It was in some gorse bushes and I was able to approach within about fifteen feet of it, and keep it under observation with binoculars for some time.

Its white eyestripe with a dark line above and below was very marked.

JUDITH M. FERRIER.

UNDOMED NEST OF CHIFFCHAFF.

IN connexion with Mr. Owen's note of an undomed nest of the Willow-Warbler (*antea*, XXIV., p. 223), a similar freak on the part of the Chiffchaff (*Phylloscopus c. collybita*) seems worth recording. This nest was found by my friend, Col. C. Bates, in his garden at Chorlton Hall, near Malpas, Cheshire, on June 11th, 1932, in a berberis bush. It contained several newly-hatched birds and one typical Chiffchaff's egg. It was 35 inches from the ground, an open nest, undomed, built of dried grass and lined with feathers and a little hair, the berberis leaves forming a perfect umbrella over it. The bird slipped off the nest without giving a good view. On July 14th the birds had flown, but one infertile egg remained unbroken. The Rev. F. C. R. Jourdain kindly examined and reported upon the nest and egg, confirming my identification and pointing out that, though there was a well-made circular cup instead of the usual domed top, the characteristic dead leaves in the foundation were present.

The specimens have been presented by Col. Bates to the Grosvenor Museum, Chester.

W. HENRY DOBIE.

BLACK REDSTART IN INVERNESS-SHIRE.

As the Black Redstart (*Phaenicurus o. gibraltariensis*) does not appear to have been recorded from the north-west mainland of Scotland, I may note that I saw a single male on April 29th, 1921, at Samalaman, Glenuig, on the south-west coast of Inverness-shire. The bird, which I am very familiar with in the Alps, was seen while I was watching in the early morning great numbers of newly arrived spring migrants.

T. G. LONGSTAFF.

NESTING-HABITS OF THE KINGFISHER.

THESE observations were made eleven years ago, and are now set out in the hope that they may help to confirm, and in one or two instances, amplify the excellent notes of Mr. B. B. Rivière on the breeding-habits of this species (*antea*, p. 262).

They were made at two nesting sites in South Wales, both being badly lighted, a narrow brook running between steep banks of sand and clay, much overshadowed by trees.

On March 13th, 1922, fresh earth was seen under the burrow at site 1, and three days later two fresh attempts had been made at site 2, some twenty yards further up the stream, but neither of these were excavated for more than four to six inches; in one a large stone obstructed further progress.

On March 25th observations were made from a hide put up opposite to the burrow at site 1. At 7.15 a.m. one of the birds was fishing in the stream immediately under the entrance to the burrow, and was seen to capture a fish some three inches long, which it carried out of sight upstream. Between 8 and 9.30 a.m. both birds were busy working inside the burrow, relieving each other, and resting at intervals on the perch, which stuck out from a mass of drift-wood in the middle of the stream. When they rested it was easy to distinguish the male from his mate, and also to see that they had been excavating, for their bills were always covered either with grains of sand and earth, or clay. As Mr. Rivière observes (p. 263), the bunched appearance of the female was apparent, and this I think is well displayed in the accompanying photograph, which also shows a great lump of clay sticking to her bill. The male's slimmer and more alert attitude is characteristic. It struck me as strange that neither of the birds at any time made any attempt to clean their bills, but simply sat and rested and then flew back into the burrow,

scraping out the loose earth as they entered. On no occasion did I see any earth ejected, except as they entered, and I inferred that they scratched and kicked it out behind them as they went up the burrow.



KINGFISHER.

Female resting after spell of work at the nesting-hole. Note lump of clay on the bill.

(*Photographed by G. C. S. Ingram.*)

On March 27th they were still busy inside the burrow, especially between 8 and 9.15 a.m., when I timed their spells and found that each bird worked for from three to five minutes, came out and rested for some thirty seconds on the perch, and then returned to work. On one occasion the female took three spells in succession, and then flew to the perch and persistently called to the male, who was on the perch at site 2, upstream. He answered each time but seemed loath to take his turn, but at length he dashed down and into the burrow without pausing, which was their usual method of entering, scratching out a regular cascade of earth as he did so. He worked for three minutes and then shot out, head first as usual, and flew upstream again. The female had

not moved from her perch and did not do so now, and in a few seconds the male was back and inside the burrow, working for four minutes before leaving and flying upstream. Immediately he left, the female entered the burrow and hardly had she got inside than the male dashed in after her. He was out again in thirty seconds, but she remained about four minutes.

On April 3rd no work was being done and the birds were rarely seen, but I saw the male feed the female while she was sitting on the perch below the burrow. She swallowed the fish and immediately entered the burrow and remained there for fifteen minutes.

From April 5th to the 29th no regular observations were made, the birds having ceased to work and hardly being seen, except on the 19th, when one was seen to leave the burrow, but on the 29th both were very busy and excited, and constantly heard passing up and down stream to the burrow. It was presumed that from about April 3rd laying and sitting were taking place and that about the 29th the eggs hatched.

GEOFFREY C. S. INGRAM.

I should like to confirm Mr. Rivière's interesting notes on the Kingfisher (*antea*, p. 262) in so far as some observations of mine went in the case of two nests (three broods) in 1930 and 1931. I was concealed some 10 to 20 yards away and the fry taken had always the appearance shown in the plate opposite page 262, like a long bill curved down at the tip and thickest near the tip, though that tip always gave me the impression of a fish's head in a *vertical* position, bulging from a sharp snout backwards; but perhaps it was the head drooping limply sideways which gave the effect.

In my observations, which extended over a couple of weeks' feeding in each case, including one in which the nestlings were but recently hatched, the fry seemed always the same size (and light colour); but this seems unlikely and may be wrong.

The slow feeding of the young in my cases impressed me, and made watching tedious. There was a general approximation to half-hour intervals all through, but often it was three-quarters of an hour and rarely twenty minutes. My nests were on two diverging flat streams, held up below their junction by a mill dam. The parents seemed to have to go beyond the sluggish water to get the fry, at least in the down-stream direction. I watched them flying down past the dam which is one and a third miles below each nest, and I one day timed

them passing up and down at the junction, each by its own stream, which gave feeding intervals then of three-quarters of an hour to each.

The reeling noise or pulsating chirrup coming from the young in the nest was an interesting experience ; very evident when a parent arrives outside and calls, but occasionally made after it has fed them, and even when gone away.

In one of my cases there were evidently two entrance holes to the nest, several feet apart, the respective parents using one each.

At one nest it was the usual custom for the parent after feeding the young to make several flops into the water, as if to purify itself. But at another nest, which had no quite adjacent perching branches, I never saw this done. Occasionally, just after entering the hole, a strong squirt of excrement was ejected well out of the hole. On one occasion a bird rolled a white lump (excreta ?) out of the hole.

J. P. BURKITT.

BARN-OWLS NESTING IN CRAGS HIGH UP IN WESTMORLAND.

ALTHOUGH the Barn-Owl (*Tyto a. alba*) has been frequently recorded as nesting in rocks, such cases are usually either in sea cliffs or low bluffs by lochs or in valleys, so that the following notes from the Westmorland fells may be of some interest.

For a number of years I have known a pair of Barn-Owls to nest in a small crag high up on the Westmorland fells, and last year (1932) I came across two more pairs in similar places, within a radius of five miles. All three nests are over 1,000 feet above sea-level, one of them close on 1,500 feet. Since I found the first pair, they have shared their crag with Ravens twice, Buzzards three times, Merlins once—in the old Raven's nest—and Kestrels every year. The second pair had a brood of young ones in a range of rocks also occupied by a pair of Buzzards, and the third pair was in the lower part of the same big ghyll that the Ravens were using and have used from time immemorial, in one of the finest crags in the Lake District. As these Owls were only found by accident, it seems likely that a search might reveal more pairs, in similar areas where field-mice are abundant, as they are in this one.

R. A. H. COOMBES.

CATTLE FEEDING ON GEESE DROPPINGS.

THE owner of the southern end of the Island of Coll, Mr. Buchanan Campbell, farms a considerable area of grass-covered

sand-dunes or "links". Upon this ground, and the adjoining island of Gunna (which is of somewhat similar formation), he grazes large numbers of sheep and cattle. The whole of this land is annually visited by flocks of wild geese. These are chiefly Barnacle (*Branta leucopsis*), but White-fronted (*Anser albifrons*) also occur in small numbers. Owing to the fact that Gunna is often unapproachable in the stormy winter months, the geese regard the island as a sort of sanctuary and are constantly present there in large flocks.

Mr. Campbell informs me that both sheep and cattle are very partial to the droppings of these birds and he has personally observed them eating these, especially in the spring months, when the surrounding herbage is short. That they derive considerable nourishment from the droppings is evidenced by the fact that all the stock grazed on Gunna (where the geese are most abundant) are appreciably fatter, and in better condition, than those kept on the main island. As Mr. Campbell remarks, "They get as fat as if they had been fed on oil-cake". He tells me the Barnacles commence to arrive in October, but they only settle in quantity during the month of December. These large flocks depart, more or less, punctually *en masse* about May 8th.

COLLINGWOOD INGRAM.

LONG-TAILED DUCK IN CAERMARTHENSHIRE.

ON December 20th, 1932, and January 13th, 1933, and several other days in between, I watched a female or immature Long-tailed Duck (*Clangula hyemalis*) in Caermarthenshire. There appear to be no recent records of this bird in South Wales. The bird was feeding in shallow (3-5 ft.) brackish water and on one occasion 25 dives gave an average of 14-15 seconds, while on another 24 dives averaged 22 seconds.

J. F. THOMAS.

THE RUFF—AN EARLY RECORD.

ARTICLES referring to the black letter pamphlet of 1586, dealing with this subject, have appeared in *British Birds*, Vol. XIII., pp. 13-20, and Vol. XIV., pp. 68 and 259-60.

Mr. R. T. Gunther—in his *Early British Botanists and their Gardens*, 1922, p. 265—gives an extract from the diary of Richard Shanne, which so closely tallies with the description of the occurrences given in the pamphlet of 1586 that it seems worthy of record here.

The original diary is to be found in the British Museum Library (Addit. MS. 38599 [Shann Family Book]) and—as I found that Mr. Gunther's extract was considerably paraphrased—I have had it transcribed *verbatim et literatim* :—

(f.66r.) “ Anno domine 1588 There was taken at Croley or Crowley. a towne in linconneshire in the winter tyme fyve strannge and staitlie fowles, of divers collours, havinge about theyr neckes as it weear great monstrous ruffs, and had underneth those ruffles, Certaine quills to beare up the same, in such manner as our gallant dames have nowe of wyer to beare up theyr Ruffles, w[hi]ch they call Supporters. About theyr heades they had fethers so curiously sett together and frised, altogether like unto our nice gentlewomen who doth curle & frisle theyr haire about theyr heades. Three of these strannge fowles was brought unto Sir Henrie Leese and they would walke up and downe the Hall as if ”

(f.66v.) “ they weere great staites, and sometimes they would stand still, and ley theyr heades cloose together, as if they weere in a scekret counsell, which made theyr behoulders to wonder therat, and they cast them corne to eate, but they refused to taist of anie meate, and so at lenght died. I my selfe have drawne a picture like unto them which is placed in my herball. Two men that had sett lyme twigges to catch byrdes w[i]thall, did fynd them taken thercin. the like never seene nor hard of before.”

If the above extract is compared with the black letter pamphlet of 1586 it will be observed how closely the two stories tally. It will be noted, however, that Shann (or Shanne) gives the date of the occurrence as 1588 [two years later than the date of the pamphlet] and mentions the appearance of “ fyve ” [not seven] Ruffs ; three of which were brought to Sir Henrie Leese [not Sir Henry Lee]. Shann's diary records that these birds were caught by “ Two men that had sett lyme twigges to catch byrdes w[i]thall ” and the pamphlet gives the additional information that the names of these men were Richard Wallar and Richard Preston.

Shann's reference to the “ picture like unto them which is placed in my herball ” does, indeed, excite one's curiosity but I have not been able to ascertain if this herball is still extant ; it is therefore impossible to say whether his picture was drawn from the actual birds or if it was only a copy of one of the pictures “ purtrayed ” (as we learn from the pamphlet) by one “ Blackborne a Paynter in Yorke, . . . diversly amongst divers persons dispersed ”.

As the Ruff does not have the “ ruff ” in winter it would seem probable that there is nothing original in Shann's record and that he simply cribbed his information from the black letter pamphlet of 1586 and entered it surreptitiously in his diary under the heading “ Of Certain extraordinarie thinges chauncinge in my tyme and remembrance.”

HUGH S. GLADSTONE.

BAR-TAILED GODWIT IN MIDDLESEX.

ON January 24th, 1933, at Staines Reservoir, Mr. J. B. Watson and I had close views of a Bar-tailed Godwit (*Limosa l. lapponica*) at rest and in flight. There appear to be few records for the county. Harting mentions two in the *Birds of Middlesex*—in May, 1851, and in April, 1863—both records being from the Kingsbury (now Brent) Reservoir.

J. P. HARDIMAN.

FLOCK OF BLACK-TAILED GODWITS IN CAERMARTHENSHIRE IN WINTER.

HAVING looked up some references to the Black-tailed Godwit (*Limosa l. limosa*), I made the following table of its occurrence in the British Isles within the last 13 years or so, as recorded in *British Birds*, Vols. XIII.-XXV. :—

	In ones or twos.	In parties of 3 or more.
Spring (March-May)	14	5
Summer (June-August)	22	6
Autumn (September-November)...	26	6
Winter (December-February) ...	4	0

Thus the winter records are few and far between, and only of single birds ; and so it may well be guessed that I almost doubted the correctness of my identification when I say that a flock of about thirty Black-tailed Godwits spent at least a month on the coast of Caermarthenshire during the present winter ; but identification was absolutely certain—large waders, with a broad white bar on the wing, the tail white with terminal black band, and legs sticking out beyond in flight, and the bill long and straight (slightly decurved if anything), colour of tip, three-quarter-inch blackish, the rest pinkish.

The birds were first seen on December 20th, 1932, at a sort of lagoon, and afterwards at the same place on nine other dates up to January 16th, 1933. On the night of the 16th there was snow which lay to the depth of 1-2 inches, and on January 17th I failed to locate them. As I left the neighbourhood without a further visit, I cannot say if this was a temporary absence or a permanent departure.

J. F. THOMAS.

THE WHITAKER COLLECTION.—Many of our readers have some acquaintance with the wonderful collection of albinos, partial albinos and colour aberrations of all kinds in British birds formed by the late Mr. Joseph Whitaker and kept at

his home at Rainworth Lodge, Notts. There are well over 500 of these, in addition to some 60 specimens of abnormally coloured British mammals. Mr. O. V. Aplin (*Zool.* 1884, pp. 10-13) gave some account of them, but the collection was very greatly increased after that date. We are glad to hear that the whole collection has been purchased by the Mansfield Borough Council and will be kept intact in the district where many of the specimens were obtained.

In the collection there are also a number of rare British birds which have historical interest. Among them are the first British specimen of the Wall-Creeper (*Tichodroma muraria*), shot at Sabden, Lancashire, on May 8th, 1872; the only British specimen of the Egyptian Nightjar (*Caprimulgus ægyptius*), killed by Mr. Whitaker's keeper at Rainworth on June 23rd, 1883; the second recorded specimen of the American Peregrine (*Falco p. anatum*), shot at Newbold Verdon, Leicestershire, October 31st, 1891, but not recognized till 1911 (*cf. British Birds*, Vol. V., p. 219); a male Harlequin-Duck (*Histrionicus h. histrionicus*) found dead at Filey, Yorks., in 1862, and several other birds of more than local interest. Now that the collections of Sir V. H. Crewe and Mr. J. B. Nichols have been dispersed, it is satisfactory to know that the Marshall Collection is now permanently housed in the Taunton Museum and the Whitaker Collection at Mansfield.

F.C.R.J.

IMMIGRATION OF WAXWINGS.—The following are additional observations to those already recorded (*antea*, pp. 259, 277):—

Lincolnshire.—Mr. G. H. Caton Haigh writes that in the middle of November, 1932, there was a flock of about a hundred Waxwings feeding on haws at Driby; on November 24th four were seen at Tetney Lock, where they remained some days, and on the same date two were shot at North Cotes, two were seen there on the 26th, another on December 12th and another on the 13th.

Isle of Man.—Mr. P. G. Ralfe informs us that two Waxwings were seen at Kirk Michael on November 7th.

AMERICAN BITTERN IN OUTER HEBRIDES.—We learn on good authority that an American Bittern (*Botaurus lentiginosus*) was shot on the island of Benbecula, Outer Hebrides, on December 27th, 1932. Previous to this date there had been southerly gales. The bird was a male in fat condition (weight 1 lb. 11½ oz.), and had the remains of a vole in the gizzard. There appears to be no previous record of the occurrence of this species in the Outer Hebrides.

WHITE BARNACLE-GOOSE IN KIRKCUDBRIGHTSHIRE.—Mr. H. Carr writes that on December 28th, 1932, when wild-fowling on Southwick Marsh, Kirkcudbrightshire, he saw what was undoubtedly a white, or nearly white, Barnacle-Goose (*Branta leucopsis*) flying in the middle of a flock of 100 to 150 of these geese.

In an article on white wild geese (*Scot. Nat.*, 1926, pp. 37-46) Mr. H. S. Gladstone stated that the only white Barnacle he knew of was one shot on the Dumfriesshire side of the Solway on January 3rd, 1925.

LONG-TAILED DUCK IN MERIONETH.—Mr. W. E. Kenrick informs us that on the morning of December 25th, 1932, he and his brother saw a Long-tailed Duck (*Clangula hyemalis*) on the Barmouth estuary, opposite Bontddu. The bird is an uncommon visitor to north Wales.

REDSHANK EATING FISH.—Colonel W. A. Payn informs us that while skinning a Redshank (*Tringa totanus*) shot in Norfolk in January, 1933, during the cold snap, he found in the gullet a dozen small fish from one to one and a half inches long. Professor C. J. Patten records fish as a food of the Redshank, but this is the only case we have any note of.

REVIEW.

Die Vögel der paläarktischen Fauna. Von Dr. Ernst Hartert. *Ergänzungsband in Gemeinschaft mit Dr. Friedrich Steinbacher bearbeitet.* Heft. 1. (Berlin: Friedländer & Sohn.)

THIS is the first part of a supplement, which will bring up to date from 1922 Dr. Hartert's great work on the Palæarctic avifauna. So much ornithological work is done in this region that constant revisions are necessary and for some time it has been difficult to keep Dr. Hartert's work up to date, so that this supplement will be invaluable. For the sake of convenience the information given in the *Nachtrag I.* (published in 1923) will be incorporated. In the present supplement Dr. Hartert has co-operated with Dr. Steinbacher.

Of special points affecting British birds in this part we may note that the British Chough, which is the typical form, is separated from the bird occurring in the Alps and Pyrenees on size. But we cannot agree with Dr. Hartert's wing measurements, which he gives as 253-260, occasionally 276. Our measurements of 20 British Choughs range from 245 to 280, while one female collected by Knox in co. Mayo, Ireland, actually has a wing of 293 mm. Of the twenty-one measured, seven have wings of more than 270 mm., and although the British may average smaller, there seems rather too much overlapping to warrant separation. The Himalayan bird, it may be noted, is much larger and is rightly separated. The Scottish Crossbill is treated as a subspecies of *L. pytyopsittacus* the Parrot-Crossbill. In the *Practical*

Handbook (Vol. I., p. 88) we remarked that should it be proved that the Common Crossbill also breeds in the Highlands, then the Scottish Crossbill must be considered as a form of *L. pytyopsittacus*. The Common Crossbill may breed in the Highlands, but so far this has not been proved, and it seems better still to regard the Scottish bird as a local form of the Common Crossbill.

We shall look forward to the publication of further parts of this valuable work.
H.F.W.

LETTERS.

BIRDS TAKING BUTTERFLIES.

To the Editors of BRITISH BIRDS.

SIRS,—I am making an investigation into the extent to which butterflies in the perfect or imaginal state are preyed upon in the British Isles by birds, and should be grateful for any first-hand observations, giving, where possible, the species of both butterfly and bird, the date and locality, whether taken at rest or on the wing, how gripped (by wings or body), whether killed by being rubbed against an object, whether consumed by adult or young, whether the wings were swallowed, whether unsuccessful attempts at catching were noticed, and other details of interest. Wings detached by the bird are of value, both as evidence of identity, and also by reason of the imprint of the bird's beak which is sometimes shown.

Published records up to and including the year 1908 have been summarized in the admirable paper by Sir Guy Marshall, C.M.G., F.R.S., "Birds as a Factor in the Production of Mimetic Resemblances among Butterflies" (*Trans. Ent. Soc. Lond.*, 1909, pp. 329-383). I am making a search in both entomological and ornithological literature for British records published since this date, but as such are frequently not indexed and are easily missed, I should also be most grateful for any references which may be known to your readers, especially in the less well-known publications.

Communications can be sent to me c/o the Entomological Department, British Museum (Natural History), South Kensington, London, S.W.7.
C. L. COLLENETTE.

DRINKING- AND FEEDING-HABITS OF GREAT SPOTTED WOODPECKER.

To the Editors of BRITISH BIRDS.

SIRS,—Mr. N. Tracy (*antea*, p. 257) questions the habits of Great Spotted Woodpeckers as to drinking.

In most woods where this species resorts there is a supply of rain water held in the trees themselves. I have seen a Great Spotted Woodpecker, after a lusty feed off coconut, repair to a beech bole, where, at the junction of a bough, a useful pool of water had collected.

The bird took twelve beakfuls consecutively. The apparent habit of this species of taking the necessary "grit" also from trees is interesting. I have watched, through glasses, a bird after a meal of nuts from the bird-table resort to a bough of oak or wych-elm and tear off large lumps of lichen and devour them with the vigour which accompanies all the actions of this species. Bark also may have been taken with the lichen.

The Great Spotted Woodpecker is ungainly on the ground, and it would appear to have solved its food problem by finding it chiefly in the trees—its safe and protective habitat. CATHARINE HODGKIN.

ECONOMIC STATUS OF LITTLE OWL.

To the Editors of BRITISH BIRDS.

SIRS,—I am endeavouring to make an enquiry into the economic status of the Little Owl (*Athene noctua*), both at home and abroad. I should be very glad of any evidence (provided it is first-hand) in connexion with the food of the bird. Also the food pellets and bodies of Little Owls, especially if killed on account of the harm they are supposed to be doing, would be invaluable to me. I hope to give considerable time to this work throughout 1933.

HILARY, GIRTON, CAMBRIDGE.

ALICE HIBBERT-WARE.

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ORNITHOLOGICAL REPORT FOR NORFOLK FOR 1932.

BY

B. B. RIVIERE, F.R.C.S., F.Z.S., M.B.O.U.

I TAKE this opportunity of thanking all my correspondents, both old and new, who have sent me their notes for 1932. The study of birds, once the interest of the few and even regarded as somewhat eccentric, is now, in this county at least, an exceedingly popular hobby. While the amateur collector has become almost extinct, his place has been taken by a new generation, far more numerous, of those who are content to watch birds. That this is as it should be, and much to be encouraged, none will deny, though to the historian of a county's avifauna it has created a fresh difficulty. With the practical cessation of shooting, records of rarities are necessarily confined to "sight records". Their value, therefore, depends entirely upon the reliability of the observer, and, with the large increase in the number of these, this must often remain an unknown quantity.

The use of the term "rarity" brings me to another point not always, I think, understood. A species is only really rare when it is numerically scarce within its normal habitat, and such a bird merits the strictest protection at all times. The "rare" autumn migrant to our shores, however, comes under a different category, its "rarity" usually depending upon how far it has wandered beyond its normal geographical range. The "rarer" such a bird is, generally the further it has thus strayed, and the less the likelihood of its regaining its breeding quarters in the following spring. Where, therefore, such a straggler's identity cannot with certainty be otherwise established, there can, in my opinion, be little harm in shooting it.

WEATHER.

1932 was the third of a succession of years of mild and open winters. January and February were exceptionally dry months, the only spell of wintry weather, accompanied by squalls and blizzards, occurring between February 9th and 13th. Spring was very backward, the weather from late March till mid-June being cold and wet. There was a fine warm spell from mid-June till mid-July, and again throughout most of August. This latter was an unusually warm month, August 19th, with a temperature of 96.4 degrees, being the hottest day ever recorded in East Anglia

(R. J. Preston). The September and October rainfall was slightly above the average, and the last two months of the year were unusually mild.

MIGRATION.

More notes than usual of those sent me this year refer to spring movements. This is fortunate, for we still know less of this migration than of the more obvious and spectacular arrival upon our shores in autumn.

On *March 24th*, between Mundesley and Bacton, numbers of Rooks and Grey Crows were noted by Mr. R. C. Bell following the coast-line S.E. towards Yarmouth, while at 5.15 p.m. on the same day a flock of some 40 Lapwings was seen by Mr. R. M. Garnett travelling E. at Kelling. Actual emigration was, as usual, only detected from the Suffolk coast. At 6.15 p.m. on *March 24th*, between Gorleston and Lowestoft, Mr. C. G. Doughty watched a flock of some 1,000 Lapwings flying low from the west, which, on reaching the coast-line, divided into two, one flock rising high in the air and making out to sea to E.N.E., while the other turned back to the W. After a short interval the second flock reappeared and, rising at the shore-line, also departed E.N.E. out to sea, some eight or ten birds only dropping out and returning to the land.

On *March 26th*, between 6 and 7 a.m., flocks of Starlings were arriving at Gorleston from the W. and, rising to a great height at the coast-line, flying out to sea to N.E. (E. A. Ellis). On the *27th* and *28th* Grey Crows were passing E. during the morning at Kelling (R.M.G.). On the *29th* Redwings were heard passing over Gorleston during the night, the direction of their flight appearing to be to N.E. (E.A.E.). Redwings were again heard passing over Yarmouth on the night of *April 6th*, but in what direction could not be distinguished (E.A.E.). On *May 10th* the usual westerly movement of *Hirundines*, mostly Swallows, was noted at Kelling by Mr. Garnett, while on *June 22nd* Curlews, and on *June 28th* large numbers of Starlings, were seen travelling W. along the coast-line by the same observer. Chaffinches, Sky-Larks, Starlings and Lapwings were coming in from the sea at Kelling on *October 7th* and *8th*, and Linnets on *October 24th*, while between *October 10th* and *25th* there was a large westerly passage of Sky-Larks, Starlings, Lapwings, Rooks, Jackdaws and Hooded Crows (R.M.G.). Each morning between *October 22nd* and *25th*, Sky-Larks, Starlings and Lapwings were seen by Miss J. Ferrier coming in off the sea in an E.

to W. flight at Hemsby, and again between *November 1st* and *4th* the same species, with the addition of Rooks, Chaffinches and Greenfinches. Blackbirds were noted coming in from the sea on *November 1st*, and westerly movements of Hooded Crows, Lapwings, Starlings and Sky-Larks on the *1st* and of Hooded Crows and Lapwings on the *9th* (R.M.G.).

For the following notes from the E. Dudgeon Light-ship I am again indebted to Mr. S. G. Sharman, who has also obtained for me from a friend on board the wings of birds killed at the Outer Dowsing.

February 14th.—Wind N.W. Flocks of waders to W.

February 20th and 25th.—Wind N.E. Guillemots and Razorbills to N.

March 8th.—Wind N.W. Starlings at lantern at night.

March 14th.—Wind W.N.W. Starlings and Sky-Larks passing W.

March 15th.—Wind W. Starlings and Sky-Larks passing W.

March 20th.—Wind S.E. Chaffinches and Wheatears flying to W.S.W.

March 22nd.—Wind E.S.E. Chaffinches, Wheatears and Meadow-Pipits to W.S.W.

March 24th.—Wind S.E. Chaffinches and Wheatears flying W. A Brambling seen.

March 26th.—Wind W.S.W. Starlings, Chaffinches and Wheatears to S.W.

March 31st.—Wind S.W. Chaffinches, Titlarks, Wheatears and Wagtails to W.S.W.

April 1st.—Wind S.W. Large quantities of Starlings and Larks around lantern at night.

April 2nd.—Wind W. Wheatears, Chaffinches, Starlings and Wagtails flying W.S.W. Flocks of Rooks to N.W. "Rooks were passing over the ship during the day in flocks of tens and twenties (not in quantities like they do in autumn) and they had a definite direction N.W. I saw the first flock just before noon and should say I saw about eight or nine flocks between that time and 4 p.m., when I went off watch. There were more flew over, as my watch mate informed me, but the exact number I don't know. I saw two flying in the rays of the light that middle watch, midnight to 4 a.m., the same night, but none next day" (S.G.S. *in litt.*).

April 4th.—Wheatears, Wagtails and Chaffinches flying W. Wind N.E.

April 5th.—Wind E. Fog. Wheatears, Wagtails, Goldcrests, Chaffinches, Titlarks and Starlings in large quantities at lantern at night and many killed. All departed in morning to about W.S.W. (Wings sent me of birds killed at the Outer Dowsing Light-vessel on this night were those of Robin, Goldcrest, Meadow-Pipit and Black Redstart. B.B.R.)

April 7th.—Wind S.W. Two Yellow Wagtails came on board and departed W.N.W.

April 9th.—One Yellow Wagtail on board.

May 13th.—Wind S.W. Swallows flying W.S.W. Two Willow-Wrens on board.

May 14th.—Wind S. Swallows to W.S.W. Three Willow-Wrens.

May 15th.—Wind S.S.E. Swallows to W.S.W. Two Willow-Wrens and two Spotted Flycatchers. At night a Tawny Owl, Sparrow-Hawk, Wheatears, Whitethroats and Willow-Wrens. Birds departed to W. and W.S.W. (Wings sent to me were those of Common Wheatear and Spotted Flycatcher. B.B.R.)

May 17th.—Wind N.E. Wheatears (5), Whitethroats (2), Spotted Flycatchers (2). Left to W.S.W.

May 18th.—Wind S.E. Sandpipers (2), also two flocks of small waders flying W.N.W.

May 23rd.—Wind N.E. Swallows all day to W. Four Spotted Flycatchers.

May 27th.—Wind N.E. A few Swallows. Two Spotted Flycatchers. (Wings sent me from the Outer Dowsing Light-vessel during May were those of Common Sandpiper, Willow-Warbler and Lesser Whitethroat. B.B.R.)

June.—A few Swifts and Martins on their usual E. to W. flight.

July 4th.—A passage of Lapwings E. to W. all day.

August 13th.—Wind S.W. Waders (? species) passing W.

August 14th.—Wind S.S.E. Willow-Wrens, Pied Flycatchers (2), Spotted Flycatchers. Left to W.S.W.

August 18th.—Wind S.S.E. Willow-Wrens, four Pied Wagtails (? *Motacilla a. alba*. B.B.R.) flying W.S.W.

August 19th.—Wind S.S.E. Willow-Wrens and Pied Wagtails to W.S.W. and W.

August 21st.—Wind E. Two Woodcocks, Meadow-Pipits and Willow-Wrens.

August 25th.—Wind E. Seven Pied Wagtails to W.S.W.

August 29th.—Wind E.S.E. Three Willow-Wrens.

August 31st.—Wind W.S.W. Pied Wagtails to W.S.W.

September 7th.—Wind S.S.W. Wheatears (9) flying W. and W.S.W.

September 8th.—Wind S. Three Redstarts.

September 13th.—Wind S.S.W. Lapwings proceeding W.

September 16th.—Wind N.W. Whitethroats, Wheatears and Pied Wagtails to W.S.W. and S.W.

September 18th.—Wind N.N.W. Wheatears, Willow-Wrens, Redstarts and Pied Wagtails to W.S.W. and S.W.

September 20th.—Wind N.E. Goldcrests, Wagtails and Meadow-Pipits.

September 21st.—Wind N.N.E. Numbers of Meadow-Pipits.

September 23rd.—Wind N.N.W. Wheatears, Redstarts and Meadow-Pipits.

September 24th.—Wind N.W. Three Sparrow-Hawks flying W.

September 25th.—Wind S.W. Numerous flocks of Lapwings flying W.

September 30th.—Wind S.E. Large number of Sky-Larks killed at lantern at night.

October 1st.—Wind N.E. Few Thrushes and numerous flocks of waders flying W. and W.S.W.

October 2nd.—Wind N.E. Thrushes, Wheatears and Lapwings to W. and S.W.

October 3rd.—Wind N.E. Starlings to W. and W.S.W.

October 7th.—Wind S. Big migration to W.S.W. of Sky-Larks, Meadow-Pipits, Chaffinches, Bramblings and Starlings. Flocks continuous during the afternoon. Hedge-Sparrows seen.

October 8th.—Wind S.S.E. Starlings, Sky-Larks, Chaffinches and Bramblings to W.S.W.

October 10th.—Wind S. A few Goldcrests.

October 11th.—Wind S. Finches and Sky-Larks proceeding W.

October 12th.—Wind N. Thrushes, Sky-Larks and Chaffinches flying W.

October 13th.—Wind W.S.W. Chaffinches and Starlings to W.

"I have noticed on three occasions this autumn Lapwings resting on the water alongside the ship. The first time two birds alighted on the water, the second time one, and the third time two. The birds seemed in an exhausted condition and on the three occasions there had been strong head-winds for them. I noticed to rest on the water they chose the lee side of the ship, where the water was comparatively calm, and there alighted gracefully and rested quite comfortably. They had their tails well spread and wings partly open, seemingly to offer most feather surface to the water. They made no effort to paddle, but were able to fly off the water as easily as a gull, and they kept repeating this as on all occasions there was a good tide, and as they floated clear of the calm caused by the ship into rough water they flew up and settled again in the calm patch. They continued this several times until they appeared rested, and then on all three occasions proceeded in a westerly direction." (S.G.S. *in litt.*)

November 15th.—Wind E. Moorhens (3), Starlings and Sky-Larks proceeding W.

November 16th.—Wind E. Starlings, Thrushes and Fieldfares to W.

November 17th.—Wind S.E. Starlings and Chaffinches to W.

November 19th.—Wind S. Moorhens, Thrushes and Starlings to W. (Wing of Jack Snipe sent me which was killed at the Outer Dowsing Light-vessel on the night of November 16th. B.B.R.)

CLASSIFIED NOTES.

GOLDEN ORIOLE (*Oriolus o. oriolus*).—On April 15th one was seen in a roadside hedge between Morston and Stiffkey by Mr. D. J. Thomas (S. H. Long).

COMMON CROSSBILL (*Loxia c. curvirostra*).—Miss E. L. Turner tells me that she watched a female feeding four fully fledged young ones at Fowlmere on September 25th—a most exceptional date for this species, whose normal nesting season is in the first four months of the year.

BLUE-HEADED WAGTAIL (*Motacilla f. flava*).—A pair of Blue-headed Wagtails again nested in Norfolk in 1932. Both cock and hen were easily recognizable as the same individuals which bred in 1931, while the nest was within a few yards of the site of that of last year. This contained six eggs when found on May 25th, and two young ones were successfully reared.

On August 21st a male was seen by Mr. Garnett at Salthouse.

GREY-HEADED WAGTAIL (*Motacilla f. thunbergi*).—An adult male of this Northern race was shot by Mr. E. C. Bird at Salthouse on September 12th, and its identification later confirmed by Dr. C. B. Ticehurst.

The only other Norfolk specimen was killed at Sheringham in May, 1842.

GREY WAGTAIL (*Motacilla c. cinerea*).—A pair again nested at Hellesdon (L. Lloyd).

Another pair bred at Bolwick, but unfortunately deserted their nest, which contained two eggs (W. Buxton).

This is the first time more than one pair of Grey Wagtails have been known to nest in the county.

WILLOW-TIT (*Parus a. kleinschmidti*).—Mr. Hugh Thompson, who knows the bird well, tells me that he heard a Willow-Tit near Alderfen Broad on August 7th.

LONG-TAILED TITMOUSE (*Ægithalos c. roseus*).—Probably owing to a succession of mild winters, Long-tailed Tits appeared to be unusually abundant in 1932. I found four nests within a radius of less than a quarter of a mile at Woodbastwick, all of which were completed by the end of March, and all of which hatched off.

BEARDED TITMOUSE (*Panurus b. biarmicus*).—Owing to a succession of mild winters the stock of these delightful little birds in Norfolk is probably higher than at any time since 1916-17, when they were decimated by a prolonged spell of hard weather. Major A. Buxton estimates the number of pairs breeding at Horsey in 1932 at about ten, and Mr. Vincent within his area at between twenty-five and thirty.

GREAT GREY SHRIKE (*Lanius c. excubitor*).—As already reported (R. M. Garnett, *antea*, XXV., p. 302), one frequented a definite small area of about a quarter of a mile on Kelling Heath from January 4th-26th. I had the pleasure of seeing it on January 21st. Another was seen by Mr. A. H. Macpherson at Blakeney on September 16th.

WAXWING (*Bombycilla garrulus*).—Waxwings, which, as already reported (*antea*, XXV., p. 347), arrived in considerable numbers in the previous November, were reported from time to time during the remainder of the winter. On January 30th five were seen in a Norwich garden (*antea*, XXV., p. 303). On February 3rd three, and on February 25th about a dozen, appeared in the garden of the Norwich Castle Museum, and on March 4th eleven in the grounds of the Norfolk and Norwich Hospital (G.J.C.). The latest seen was one on April 11th in a garden at Trowse, which four, and latterly three, had visited daily since March 26th.

In November a fresh arrival took place, but on a smaller scale. Several were seen at Thornham on November 11th (S. H. Long), and one at Hickling on November 14th

(J. Vincent), while on November 30th one was picked up dead at Wroxham (S. H. Long).

NORWEGIAN BLUETHROAT (*Luscinia s. gaetkei*).—On May 27th a female was sent me by Mr. B. Holman, which he had found washed up on the beach at Salthouse.

SWALLOW (*Hirundo r. rustica*).—A late brood of five young Swallows left their nest in one of our stables on September 23rd. For the next few days they were lined up in a row on the stable roof each morning, where they were fed by their parents. From this point of vantage they took at first short, and each day longer, flights, until on the 26th they were on the wing most of the day. They all returned to roost in the old nest each night and continued to do so until October 12th, which seems a long time. On the 13th all our local Swallows disappeared, and with them this little family party.

HOOPOE (*Upupa e. epops*).—On June 5th a Hoopoe was seen by Messrs. Garnett and Holman at Salthouse. This is the first June record for Norfolk that I have heard of. Another spent nearly a fortnight in a garden in Yarmouth during September (A. H. Patterson).

GREAT SPOTTED WOODPECKER (*Dryobates m. anglicus*).—I have this year heard of no less than four Great Spotted Woodpeckers being caught in Jay-traps baited with eggs. In one case a defective trap having failed to spring, the eggs were sucked through a neat round hole drilled in each. A new trap being substituted next day, a Great Spotted Woodpecker was caught, and being fortunately unhurt was released. This appears to be a new habit and it is certainly an unfortunate one, for it would, indeed, be deplorable if this attractive bird were added to the list, already too long, of those sacrificed to pheasant-rearing.

CUCKOO (*Cuculus c. canorus*).—The male of a pair of Pied Wagtails (*Motacilla a. yarrellii*) which always nest in the ivy on the house arrived on March 19th, and the female on the 23rd. On May 9th the hen, accompanied by her mate, was searching the ivy all round the house for a suitable nesting place; next day, May 10th, she was building, the site chosen being a deep, narrow cleft between two stout stems of ivy. When the nest was finished it was completely covered from above, and its outside rim was $2\frac{1}{2}$ inches back from the entrance between the two ivy stems, this being 2 inches wide. As this pair of Wagtails is annually victimized by a Cuckoo, I was interested to see what would happen, as it was quite impossible for a

Cuckoo to deposit her egg in this nest except by means of her bill. On May 14th, when the nest contained two eggs, a Cuckoo was seen many times during the afternoon in a tree overlooking the site of the nest. She was twice seen to swoop down and alight in the ivy beside the nest, and was once seen sitting on the roof above it. I examined the nest the same evening—the eggs could only be reached by the tips of two fingers—and found it still contained the two Wagtails' eggs and no Cuckoo's. If she made any further attempt, the Cuckoo never succeeded in placing her egg in the nest, and the young Wagtails were duly hatched and reared.

This is, I think, sufficient evidence that this particular Cuckoo made no attempt to place her egg in the nest with her bill, if such a method is ever employed, and that having failed to lay her egg directly into the nest she was unable to deposit it at all.

SHORT-EARED OWL (*Asio f. flammeus*).—Short-eared Owls were conspicuous by their absence during the summer. Mr. J. Vincent tells me that he neither saw a bird nor knew of a nest within the Hickling, Horsey and Waxham area.

COMMON BUZZARD (*Buteo b. buteo*).—An unusually large number of Common Buzzards appear to have wintered in the county. The latest I heard of were two, one of which I saw myself, on April 7th. Earlier in the year ten were seen in one day by Mr. McEwan at Holkham (S. H. Long).

MARSH-HARRIER (*Circus æ. æruginosus*).—Four pairs—a record for Norfolk—nested this year in their favourite area of the Broads, though unfortunately only one succeeded in rearing a brood. Two pairs deserted their eggs, one through attempts being made to photograph them, and the other for no apparent cause. In the third nest the young ones were found dead, and it is possible that one of the parents had been shot outside the protected area (J. Vincent):

A female or immature Marsh-Harrier, a chocolate-coloured bird with a yellow crown and chin, frequented Cley Marshes between November 23rd and December 8th (R. M. Garnett).

MONTAGU'S HARRIER (*Circus pygargus*).—At least two pairs reared broods in the Broads district (J. Vincent).

OSPREY (*Pandion haliaetus*).—One was seen at Thornham by Mr. E. F. Ladds on May 16th (*antea*, XXVI., p. 139), and one over Buckenham Broad on September 20th (W. Routh Clarke).

SPOONBILL (*Platalea l. leucorodia*).—Single birds visited Salthouse between May 18th and 30th and July 7th and 10th (R. M. Garnett). One was seen at Hickling on May 17th (A. Buxton).

COMMON BITTERN (*Botaurus s. stellaris*).—The number of breeding pairs appears to be well maintained. Major A. Buxton reports that on one occasion during the spring seven could be heard booming simultaneously from Horsey Staithe, and seven between Catfield and Blackfleet Broads. Booming was first heard at Hoveton on March 30th, and Major Buxton heard one as late as August 2nd.

GARGANEY (*Anas querquedula*).—Captain H. J. Cator tells me that he believes few, if any, bred at Ranworth this year, while at Hickling there were no more than three pairs (J. Vincent). A pair, however, bred and reared a brood in the Wensum Valley near Ringland—a new locality (L. Lloyd).

In spite of this apparent scarcity 15 were killed during the August duck-shooting at Hickling (J. Vincent), and six during one evening flight on August 20th at Buckenham (H. Frere).

BUFFEL-HEADED DUCK (*Bucephala albeola*).—On several days during the month of February, on the sea off Hunstanton, Mr. C. T. M. Plowright watched through a telescope—once as close as 40 yards—a duck which he identified as a female Buffel-headed Duck. His description is as follows :

“Head blackish, nape sooty. An oblong white patch on each side of the cheeks from below eye to nape. Back and mantle brown, under parts ashy white. It was feeding on small mussels in company with both Velvet and Common Scoters, compared with which its small size was very noticeable.” Mr. Plowright is so good an observer that I think there can be no doubt as to the correctness of his identification, which was confirmed by Mr. N. Tracy, who also saw the bird. The only authentic Norfolk specimen of this American species is the adult drake in the Norwich Museum, which was killed near Yarmouth about 1830.

GREAT-CRESTED GREBE (*Podiceps c. cristatus*).—The pair of Grebes which for many years have nested on a small Broad at Woodbastwick had already arrived on February 10th, when I came to live at the Old Hall. They were building at the end of March and the nest appeared to be finished on April 2nd. The first egg was laid on April 5th, and on the 7th there were three. On the 8th there were still only three, but on the 9th there were four. On May 2nd one egg had hatched and a second was chipping. On the 3rd two

were hatched and a third chipping. On the 4th three were hatched and the young birds were out of the nest, probably in hiding close by, for as I rowed away the female returned to brood and the cock brought her fresh building material, which she added to the nest. On the morning of May 6th all three chicks were in the nest and the remaining egg was chipping, and the same evening the last chick successfully emerged. From this it would appear that brooding commenced with the laying of the first egg, the incubation-period being 27 days. The youngest chick did not survive long, but the remaining three were back in the nest on the evenings of the 7th and 8th; and also returned to it from time to time during the day, when they were brooded by both parents. Part at least of the rest of the day was spent in riding on their father's back. A week or two later—unfortunately I made no note of the date—one of the old birds, I think the female, disappeared with one young one, the other staying on the Broad and feeding the remaining two. Early in July these were full grown, and spent some time each day flying up and down the Broad. One left about the middle of the month and the other on July 25th. On July 28th the female returned and both old birds were together on the Broad until August 1st, when one again left. The remaining bird stayed on the Broad until November and was last seen on November 13th.

KENTISH PLOVER (*Charadrius a. alexandrinus*).—One was identified by Mr. J. Vincent on Rushhills, Hickling, on June 20th.

RUFF (*Philomachus pugnax*).—In addition to Mr. Garnett's unusually early record, already reported (*antea*, XXV., p. 305), of a Ruff at Salthouse on February 11th, normal numbers of this species passed through.

SPOTTED REDSHANK (*Tringa erythropus*).—Single birds were seen at Salthouse by Mr. Garnett on August 16th, 24th and 27th, and September 7th.

On September 20th I watched one at close quarters on a flooded marsh. It was calling softly with a disyllabic note. In view at the same time were a Ruff and Reeve, three Green-shanks, a Black-tailed Godwit and a Green Sandpiper, in addition to a number of Dunlin and Ringed Plovers and several Snipe. A pretty good feast for a bird-lover's eyes!

GREY PHALAROPE (*Phalaropus fulicarius*).—A female in juvenile plumage was shot on Breydon on November 29th (E. C. Saunders).

RED-NECKED PHALAROPE (*Phalaropus lobatus*).—One was seen on Rushhills, Hickling, between May 13th and 18th. (J. Vincent).

AVOCET (*Recurvirostra avosetta*).—Two were identified on Breydon on November 19th (E. C. Saunders). Other late dates of Avocets on autumn passage in Norfolk are: November 2nd (1888), December 5th (1926) and November 30th, (1931).

BLACK-TAILED GODWIT (*Limosa l. limosa*).—Black-tailed Godwits appeared in about their usual numbers at both migration seasons. At Hickling, parties of four, four and three were seen during April, and three on May 2nd (J. Vincent), while on May 16th two were seen at Salthouse (R. M. Garnett). Single birds were seen by Mr. Garnett at Salthouse during August, and on September 20th I saw one and on September 25th two on some flooded ground near Yarmouth.

WOODCOCK (*Scolopax r. rusticola*).—Amongst eighteen Woodcocks shot in one of Mr. M. Falcon's coverts at Sprowston on November 23rd was one bearing a Stockholm ring (E.925). I learn from Prof. Lönnberg that this bird was ringed on June 6th, 1932, at Gustafborg, in N.W. Scania. Prof. Lönnberg adds: "It was of a special interest to hear about this one, because hitherto Woodcocks ringed in our southernmost province, Scania, have been recovered further south, on the Pyrenean Peninsula and southern France."

BLACK TERN (*Chlidonias n. niger*).—Unusually large numbers of Black Terns passed through at both migration seasons, single birds and small parties being reported from many localities on the coast and in the Broads district. On May 1st I saw a flock of between 25 and 30—the largest number I have ever seen together—flying E. across Salthouse Broad. Between August 14th and 24th many were seen over Ormesby Broad, parties up to eight in number being counted on several days (E. C. Saunders).

GULL-BILLED TERN (*Gelochelidon nilotica*).—Mr. J. Vincent tells me that he identified a Gull-billed Tern at Salthouse on June 30th. It was near, but did not associate with, a number of Sandwich Terns, with which he was able to compare it.

SANDWICH TERN (*Sterna s. sandvicensis*).—About 600 pairs nested at Salthouse (S. H. Long), 29 at Blakeney (R. Gaze) and 204 at Scolt Head (S. H. Long). The first arrival was noted at Salthouse on March 27th (W. Bishop).

ROSEATE TERN (*Sterna d. dougallii*).—None are known to have nested in Norfolk in 1932.

COMMON TERN (*Sterna h. hirundo*).—1,459 nests were counted at Blakeney Point by Mr. G. Marples. This is the largest colony in Norfolk.

LITTLE GULL (*Larus minutus*).—Two Little Gulls, one adult and one immature, were seen at Hickling on May 1st (J. Vincent), and another immature bird at Salthouse on May 16th (E. A. Ellis).

GREAT BLACK-HEADED GULL (*Larus ichthyaetus*).—Between March 2nd and 9th Mr. Henry Cole watched almost daily a Gull, feeding with Black-headed Gulls at Cromer between the pier and the sewer outlet, which he identified as belonging to the above species. His attention was first called to it as being something "out of the way" by a fisherman, C. Braconbury by name, who is a keen observer of birds. Mr. Cole described it as appearing about the size of a Herring-Gull, but with a more slender neck. The black hood was incomplete. "Mantle darker grey than that of a Black-headed Gull. Wings more crossed than a Herring-Gull's, and with white on primaries more pronounced than in a Black-headed Gull. Bill light orange with a bar and much thicker at the tip than a Black-headed Gull's. Legs yellow."

This is a new species for Norfolk, but from the above description by an observer of Mr. Cole's experience, one must, I think, accept this record as authentic.

BLACK-HEADED GULL (*Larus r. ridibundus*).—Another new Norfolk colony has to be recorded. Mr. T. Fowler tells me that for the past two seasons, and possibly three, a considerable number have nested on the reservoirs—formed to carry off the waste water from the sugar factory at Cantley.

RECOVERY OF MARKED BIRDS.

NOTE.—Birds re-trapped and released again are omitted here and will be published in a separate list.

No.	Place and Date Ringed.	Place and Date Recovered.
RAVEN (<i>Corvus c. corax</i>).		
108365	Dumfriesshire, 15.4.32, young, by T. K. Craven.	Near West Linton (Peebles), 17.11.32, by Mrs. Marshall.
ROOK (<i>Corvus f. frugilegus</i>).		
RR.1458	Crownhill (Devon), 23.4.27, young, for St. Edmund's Sch. N.H.S.	Where ringed, 17.1.33, by Col. A. P. Grattan.
JACKDAW (<i>Colæus m. spermologus</i>).		
RS.2772	Malvern (Worcs.), 22.5.30, young, by W. A. Cadman.	Colwall (Hereford), —.11.32, by P. E. A. Morshead.
JAY (<i>Garrulus g. rufitergum</i>).		
RR.4552	Near Gt. Budworth (Ches.), 16.2.32, ad., by A. W. Boyd.	Near where ringed, 22.12.32, by ringer.
STARLING (<i>Sturnus v. vulgaris</i>).		
NF.213	Near Aberdeen, 22.6.32, ad., by A. J. Davidson.	Near where ringed, 5.2.33, by G. W. Aitken.
L.3120	Scone Estate (Perths.), 5.6.31, young, by Lord Scone.	Where ringed, 3.8.32, by ringer.
V.9482	Carlisle (Cumb.), 13.1.30, ad., by J. N. D. Smith.	Cumwhitton (Cumb.), 12.12.32, by J. Prudham.
RS.3102	Ingleton (Yorks.), —.5.31, young, by H. J. Moon.	Near Preston (Lancs.), 17.11.32, by R. Williams.
RR.5965	Ditto —.5.32.	Near Lancaster, 24.2.33, by Lt.-Col. Cowper.
P.1443	Near Gt. Budworth (Ches.), 17.5.32, young, by A. W. Boyd.	Where ringed, 7.6.32, by ringer (in Little Owl's nest).
T.4412	Ditto 18.5.29.	Near where ringed, —.1.33, by ringer.
S.4463	Ditto ad., 18.12.29.	Ditto —.1.33.
R.1396	Ditto 20.12.31.	Laage, Mecklenburg, Ger- many, —.6.32, by B. C. Thiemann.
P.3879	Oxford, 12.11.31, ad., for Oxford Orn. Soc.	Where ringed, 29.11.32, by ringer 14.12.32, by H. Dixey.
S.6293	Bluntisham (Hunts.), 14.2.31, ad., by Rev. E. Peake.	Where ringed, 13.7.32, by ringer.
AN.3310	Woodford Green (Essex), 21.10.31, ad., for Lond. N.H.S.	Near where ringed, 26.5.32, by S. Boardman.
P.7773	Shanklin (I.O.W.), 12.3.32, ad., by J. F. Wynne.	Near where ringed, 31.1.33, by A. Bloomfield.
GREENFINCH (<i>Chloris ch. chloris</i>).		
J.9116	Kirkby Lonsdale (Westmor.), —.6.30, young, by H. J. Moon.	Near Wallsend (Northumb.), 9.1.33, by A. Hepburn.

No.	Place and Date Ringed.	Place and Date Recovered.
GREENFINCH— <i>continued</i> .		
K.8751	Near Gt. Budworth (Ches.), 19.2.31, ad., by A.W. Boyd.	Near where ringed, —.1.33, by ringer.
L.6079	Ditto 9.1.32.	Where ringed, 11.4.32; near where ringed, —.1.33, by ringer.
L.6208	Ditto 8.2.32.	Mobberley (Ches.), 18.1.33, per <i>Cage Birds</i> .
L.4640 (L.7131)	Oxford, 19.11.31, ad., for Oxford Orn. Soc.	Where ringed, 18.2.32; near where ringed, 10.2.32; Mar., 1932 (3), by ringer.
M.4039	Near Marlow (Bucks.), 11.7.31, young, for W. H. Thorpe.	Near where ringed, 5.2.33, by H. Pease.
J.5270	Bluntisham (Hunts.), 14.2.31, ad., by Rev. E. Peake.	Where ringed, 14.2.32; 9.6.32, by ringer.
MF.692	Branscombe (Devon), re- leased Sidbury, 9.1.33, ad., by P. E. A. Morshead.	East Budleigh (Devon), 28.2.33, by W. Walmes- ley White.
LINNET (<i>Carduelis c. cannabina</i>).		
TT.869	Scone Estate (Perths.), 23.5.31, young, by Lord Scone.	Lochgelly (Fife), 21.1.33, per <i>Cage Birds</i> .
CHAFFINCH (<i>Fringilla c. cælebs</i>).		
L.6838	Kirkby Lonsdale (Westmor.), —.6.31, young, by H. J. Moon.	Barbon (Westmor.), 28.1.33, by Rev. E. U. Savage.
YELLOW BUNTING (<i>Emberiza c. citrinella</i>).		
H.6498	Scone Estate (Perths.), 25.3.30, ad., by Lord Scone.	Where ringed, 11.3.31, by ringer.
PIED WAGTAIL (<i>Motacilla a. yarrellii</i>).		
ND.79	Settle (Yorks.), —.6.32, young, by H. J. Moon.	Soustons (Landes), France, 13.10.32, per <i>Chasseur Francais</i> .
MISTLE-THRUSH (<i>Turdus v. viscivorus</i>).		
AN.9974	Brookland (Kent), 24.4.32, young, by R. G. Williams.	Where ringed, 1.3.33, by B. W. Hobbs.
SONG-THRUSH (<i>Turdus ph. clarkei</i>).		
S.1537	Farr (Inverness.), 5.5.30, young, by Mrs. Mackenzie.	Near Fraserburgh (Aber- deen), 24.1.33, by W. J. Caird.
Y.2478	Scone Estate (Perths.), 30.4.25, young, by Lord Scone.	Where ringed, 7.3.31, by ringer.
JF.523	Kirkmahoe (Dumfries.), 9.5.32, young, by W. & A. B. Duncan.	Ballyheigue (Kerry), 1.12.32, by T. O'Connor.
J.4659	Penrith (Cumb.), —.5.30, young, by H. J. Moon.	Workington (Cumb.), 6.2.33, by T. A. Briscoe.
NA.463	Ditto —.5.32.	Kilfinane (Limerick), —.12.32, by J. Tobin.
T.8550	Ullswater (Cumb.), —.5.29, young, by H. J. Moon.	Grange (Waterford), —.1.33, by M. H. Bowen.

No.	Place and Date Ringed.	Place and Date Recovered.
SONG-THRUSH— <i>continued</i> .		
JF.974	York, 17.6.32, ad., for Boot-ham School.	Church Fenton (Yorks.), —.1.33, by D. Morley.
R.1144	Near Gt. Budworth (Ches.), 10.12.30, ad., by A. W. Boyd.	Near where ringed, —.1.33, by ringer.
AN.1744	Oundle (Northants.), 20.5.31, young, by J. Mc.C. Fisher.	Where ringed, 2.6.32, by ringer.
P.5783	Bluntisham (Hunts.), 22.7.31, ad., by Rev. E. Peake.	Where ringed, 16.6.32, by ringer.
R.8515	Harrow (Middlesex), 7.6.30, young, by T. H. and W. R. Harrison.	Where ringed, —.1.33, by A. J. Simkins.
AN.1582	Brent Knoll (Som.), 28.5.32, young, by E. G. Holt.	Highbridge (Som.), —.11.32, by H. G. Rice.
BLACKBIRD (<i>Turdus m. merula</i>).		
AP.2209	Scone Estate (Perths.), 22.5.32, young, by Lord Scone.	Perth, 25.11.32, by J. Ford.
S.6746	Closeburn (Dumfries.), 29.1.32, ad., by W. and A. B. Duncan.	Fairlie (Ayr.), 12.12.32, by H. F. Buxton.
P.7002	Windermere (Westmor.), 2.1.32, ad., by A. E. Cohen.	Near where ringed, 13.2.33, by W. Aspinwall.
GF.668	Settle (Yorks.), 11.6.32, young, by A. H. Eggeling.	Carracastle (Mayo), 29.11.32, by F. Davy.
JF.961	Castle Howard (Yorks.), 28.5.32, young, for Boot-ham School.	Where ringed, 22.1.33, by E. J. Neal.
P.9402	Eton (Bucks.), 18.5.32, young, by M. L. Pilkington.	Slough (Bucks.), 8.1.33, by H. Morris.
V.8275	Bluntisham (Hunts.), 20.6.28, young, by Rev. E. Peake.	Where ringed, 30.7.32, by ringer.
R.6182	Woodford Green (Essex), 3.6.31, juv., for Lond. N.H.S.	Where ringed, June, 1931 (3), by ringer; South Woodford, —.11.32, per <i>Cage Birds</i> .
T.9524	Canterbury (Kent), 7.5.29, young, for St. Edmund's Sch. N.H.S.	Near where ringed, 8.2.33, by H. Coultrip.
W.9007	Bristol (Glos.), 21.4.29, young, for Clifton Coll. Sci. Soc.	Near where ringed, 21.1.33, by F. Goodridge.
STONE-CHAT (<i>Saxicola t. hibernans</i>).		
H.8593	Largo (Fife), 11.5.29, young, by W. J. Eggeling.	Near Johnstone (Renfrew), 19.1.33, by A. Hagart-Speirs.
REDBREAST (<i>Erithacus r. melophilus</i>).		
M.4241	Ullswater (Westmor.), 7.11.31, ad., by H. J. Moon.	Where ringed, 29.11.31, by ringer (impaired by Great Grey Shrike).
J.5632	Near Gt. Budworth (Ches.), 2.5.30, young, by A. W. Boyd.	Near where ringed, 9.2.33, by ringer.

No.	Place and Date Ringed.	Place and Date Recovered.
REDBREAST— <i>continued</i> .		
L.6310	Near Gt. Budworth (Ches.), 7.3.32, ad., by A. W. Boyd.	Near where ringed, 20.2.33, by ringer.
L.6249 (J.6104)	Ditto 4.10.30.	Ditto 4.6.32.
G.2221	Malvern (Worcs.), 26.2.28, ad., by P. E. A. Morshead.	Where ringed, 5.3.31; 3.5.31, by ringer; 7.3.33, by Mrs. Wright.
N.3275	Bluntisham (Hunts.), 3.3.32, ad., by Rev. E. Peake.	Where ringed, 7.7.32, by ringer.
L.1741	Cambridge, 30.1.31, ad., for Sanctuary Club.	Where ringed, 17.2.33, by Mrs. Powell.
L.7312	Shanklin (I.O.W.), 19.1.32, ad., by J. F. Wynne.	Where ringed, Jan., 1932 (2); Feb., 1932 (2); Mar., 1932 (2); May, 1932, by ringer.
H.8873	Brent Knoll (Som.), 15.7.32, ad., by E. G. Holt.	Where ringed, 20.2.33, by Mrs. Sandy.
HEDGE-SPARROW (<i>Prunella m. occidentalis</i>).		
L.5955	Near Gt. Budworth (Ches.), 8.10.31, ad., by A. W. Boyd.	Where ringed, Feb., 1932 (4); 8.4.32, by ringer.
L.5957	Ditto 13.10.31.	Ditto 6.5.32.
L.5266	Bluntisham (Hunts.), 3.11.31, ad., by Rev. E. Peake.	Where ringed, 8.2.32; 3.5.32, by ringer.
NK.886	Harrow (Middlesex), 29.9.32, ad., by A. I. Johnstone.	Where ringed, 3.1.33, by ringer.
SWALLOW (<i>Hirundo r. rustica</i>).		
M.4128	Penrith (Cumb.), —.7.31, young, by H. J. Moon.	On Drifter, 40m. W.N.W. Scilly Is., 20.5.32, by G. d'Hervé.
I.8628	Hemsby (Norfolk), 1.7.32, young, by J. M. Ferrier	Inyanyadu, Dundee Dist., Natal, 31.1.33, by A. Roberts.
SZ.507	Laugharne (Carms.), 4.8.28, young, by J. F. Thomas.	Mapfontein, Matatiela Dist., Griqualand East, 15.1.33, by Editor, <i>Sunday Des-</i> <i>patch</i> .
BARN-OWL (<i>Tyto a. alba</i>).		
AG.373	Near Gt. Budworth (Ches.), 27.6.32, young, by A. W. Boyd.	Holmes Chapel (Ches.), —.1.33, by E. J. Moody.
SPARROW-HAWK (<i>Accipiter n. nisus</i>).		
RT.4687	Hesket-Newmarket (Cumb.), 26.6.32, young, by R. H. Brown.	Near Penrith (Cumb.), 12.12.32, by Maj. Rowley.
98486	Dowles (Worcs.), 7.7.32, young, by J. S. Elliott	Bewdley (Worcs.), 2.3.33, by P. Harcourt.
HERON (<i>Ardea c. cinerea</i>).		
105001	Almondbank (Perths.), 22.5.31, young, by Lord Scone.	Near Forgandenny (Perths.), 10.10.31, by ringer.
105014	Ditto 25.5.31.	Scone (Perths.), 4.7.32, by ringer.
107646	Forteviot (Perths.), 23.5.30, young, for Perth N.H.S.	Loch Leven (Kinross), 2.2.33, by J. M. Johnstone.

No.	Place and Date Ringed.	Place and Date Recovered.
HERON— <i>continued</i> .		
106026	Kirkmichael (Dumfries.), 28.6.32, young, for W. and A. B. Duncan.	Laurieston (Kirkcudbr.), 28.1.33, by W. Walker.
109174	Uldale (Cumb.), 15.5.32, young, by R. H. Brown.	Near Lockerbie (Dumfries.), 22.12.32, by H. S. Glad- stone.
108243	Near Henley-on-Thames (Bucks.), 7.5.32, young, for E. P. Leach.	Lechlade (Glos.), 13.11.32, by W. H. Davis.
BITTERN (<i>Botaurus s. stellaris</i>).		
107448	Norfolk, 1.6.32, young, by S. Wilson.	Near Gt. Yarmouth (Nor- folk,) 27.1.33, by A. H. Patterson.
MALLARD (<i>Anas p. platyrhyncha</i>).		
AD.860	Almondbank (Perths.), 9.7.31, juv., by Lord Scone.	Where ringed, 5.10.31, by ringer.
4 Birds	Ditto	9.7.31. Ditto, Aug. and Sept., 1932.
7 Birds	Ditto	18.8.32. Ditto 17.11.32.
AJ.455	Ditto	18.7.32. Near Scone (Perths.), —, 11.32, by J. P. Cuth- bert.
AJ.447	Ditto	18.7.32. Near Bankfoot (Perths.), 29.1.33, by A. McLaren.
AA.4784	Ditto	18.8.32. Balloch (Dumbarton), 12.11.32, by F. Kepple.
AA.4762	Ditto	18.8.32. Lough Neagh (Armagh), 28.9.32, by A. J. Kent.
AK.858	Ditto	18.8.32. Ditto 28.9.32.
AG.315	Leswalt (Wigtown), 18.3.30, ad., by M. Portal.	Where ringed, 27.2.33, by J. Law.
AK.873	Ditto	27.3.31. Ditto 20.2.33.
AK.87?	Ditto	March, 1931. Ditto 22.11.32.
AK.880	Ditto	27.3.31. Lochryan (Wigtown), 5.11.32, per <i>The Field</i> .
AG.298	Ditto	14.3.32. Near Girvan (Ayr), 22.8.32, by H. W. Robinson.
AG.893	Ponsbourne (Herts.), 4.6.31, juv., by M. L. Pilkington.	Holme-next-Sea (Norfolk), —, 12.32, by G. C. Simms- Reeve.
AA.3675	Lough Beg (Antrim), 2.6.32, juv., by J. Cunningham.	Where ringed, 22.2.33, by M. Larkin.
TEAL (<i>Anas c. crecca</i>).		
RS.4601	Leswalt (Wigtown), 7.3.32, ad., by M. Portal.	Where ringed, 25.1.33, by J. Law.
WIGEON (<i>Anas penelope</i>).		
RR.4810	Loch Leven (Kinross), 1.6.32, juv., for Lord Scone.	Newton Bay, Cromarty Firth, 19.8.32, by A. Finlayson.
EIDER (<i>Somateria m. mollissima</i>).		
AA.740	Tentsmuir (Fife), 22.6.32, young, for Lord Scone.	St. Andrews (Fife), 19.8.32, by H. B. Bartram.
AA.839	Ditto	26.6.32. Ditto, 18.12.32, by J. Dall.

(To be continued.)

NOTES

UNINTELLIGENT RAVENS.

ONE always associates the Raven (*Corvus corax*) with extreme intelligence, but not so a pair (or its yearly successors, for many are destroyed round here by gamekeepers, etc.) that breed in a secluded Denbighshire gorge, not many miles away from my home. There is one particular ledge, under a very pronounced overhang, which is preferred for the nest above all others, as it is always first choice out of the five sites that I have at various times discovered. There is no question that this particular ledge has been successfully used in recent years, but the inexplicable fact remains that for the past four years (including the present) the nest has invariably collapsed into the valley below, either on or just before completion. It is true that the actual ledge appears to be only about two feet wide and to have a slight down-hill slope away from the cliff face, but it is always quite dry, so cannot be made slippery by water.

This year, the two birds were lining a new nest—an enormous affair—on March 7th. On standing some 20 feet below it, it was quite easy to see that several inches of its outer edge were hanging, totally unsupported, over space! On March 15th I was not the least surprised to find that the whole of it had fallen to the slopes below, but I have no doubt the birds will, as usual, repair one of the four other old nests in the vicinity. That they are in no particular hurry to do so was evidenced by the fact that they were neither seen or heard on the 15th.

W. M. CONGREVE.

MARSH-TIT NESTING IN STONE WALL.

WITH reference to the note on this subject (*antea*, p. 305), it is perhaps worth noting that a pair of Marsh-Tits (*Parus p. dresseri*) nested in a rough stone wall in my orchard in 1914, and twenty years earlier I found a nest in a similar situation. This note refers to the Lancashire portion of Lakeland.

C. F. ARCHIBALD.

MARSH-HARRIERS IN LANCASHIRE IN SUMMER.

AMONG donations made to the Liverpool Museum during 1932 were two Marsh-Harriers (*Circus æ. æruginosus*). These birds were obtained near Southport, Lancs., and had been

under observation for some time. The male commenced to raid a pheasant-rearing field early in June and had killed two chicks the day he was shot—June 12th. The female frequently raided the same quarters and proved very destructive to the game birds until mid-September, when she was shot whilst being mobbed by Lapwings. An internal examination of these birds showed the male to be in excellent breeding condition, the testes being well developed, while the ovarium of the female was reduced to a small granulated body. The plumage of the male is that of second summer and the female adult.

The writers very much regret that the destruction of the birds was deemed necessary. Efforts to safeguard birds nesting on the marshes, which form a portion of the area under notice, met with cordial and practical support. Unfortunately it was not foreseen that events would take the course they did ; and in view of the circumstances within our knowledge, we do not believe that the regrettable aftermath could have been prevented, either by local or outside influence.

R. K. PERRY.

F. W. HOLDER.

WHOOOPER SWAN AND AVOCET IN PEMBROKESHIRE.

CAPTAIN H. A. GILBERT informs us that a Whooper Swan (*Cygnus cygnus*) was seen by him at a distance of only 25 yards in company with a Mute Swan (*Cygnus olor*) on Pembroke Pill, and later at Cosheston, Pembrokeshire, from January 24th to 28th, 1933. The only other records apparently are two in Mathew's *Birds of Pembrokeshire*.

Captain Gilbert also informs us that he watched an Avocet (*Recurvirostra avosetta*) on the mud at Carew Pill, Milford Haven, Pembrokeshire, on February 1st, 1933. There are two records in Mathew's *Birds of Pembrokeshire*, and since that was published W. F. Bentley saw two on the mudflats off Pembroke during the winter of 1900.

GEOFFREY C. S. INGRAM.

H. MORREY SALMON.

VELVET-SCOTER IN THE ISLE OF MAN.

ON February 19th, 1932, after I had passed the walls of the sally-port on the north of Peel Castle, two male Velvet-Scoters (*Oidemia fusca*) suddenly rose from the water at the foot of the rocks below me, and flew together to the east, past the walls, which blocked my view. When I got to the other side

they were well away and settled half a mile out in a broken sea. On their rising I noticed the dark velvet-like plumage and white wing-bars, very conspicuous in flight, even in the distance.

The Common Scoter occurs occasionally in Peel bay and elsewhere round the coast, but the Velvet-Scoter has not previously been recorded in Manx waters.

FRANK S. GRAVES.

FULMAR PETREL IN SUMMER IN THE ISLE OF MAN.

ON June 26th, 1931, on the north of Peel Castle wall, I saw a Fulmar Petrel (*Fulmarus glacialis*) flying into a strong S.W. wind, about 40 yards from the rocks below me. It turned and passed me three times, evidently searching for food, but did not appear to get any.

On June 2nd, 1932, when on the west coast of the Isle of Man, I saw two birds of this species flying along the face of a high and almost sheer cliff. I watched them for 40 minutes and from their behaviour concluded they were searching for a suitable nesting site. After a few rapid strokes they planed with outstretched wings up the cliff face, almost touching it at times, but did not alight. Later, they moved to a cliff to the east, where one appeared to settle.

I saw one or two of the birds, usually at this cliff, almost every day and sometimes twice a day, until the end of the month, at times going to the cliff and not reappearing, at other times leaving it. After the end of June, although frequently at this cliff, I saw nothing more of the birds until July 27th. The last I saw of them was on August 31st. The cliff, where I feel sure they nested, has a high, sheer, straight face rising from the sea, with few grassy ledges and without heads from which they could be viewed. As the birds usually approached it flying close to the rock face, I must have failed to see them many times. I now think the birds nested here in 1931.

FRANK S. GRAVES.

[Proof of actual breeding is desirable as it has been a noticeable habit of Fulmars to "occupy" a cliff for sometimes several seasons before breeding.—EDS.]

COMMON SANDPIPER, GREENSHANK AND DUSKY REDSHANK WINTERING IN SOUTH DEVON.

DURING a fortnight's stay in south Devon in January and February, 1933, I noted several waders that do not normally winter in this country. On January 25th F. R. Barlow and I

saw two Common Sandpipers (*Tringa hypoleucos*) by an arm of the Kingsbridge estuary ; one at least of these remained at the same place till February 5th. On February 4th, at another part of the estuary, I found a Greenshank (*T. nebularia*) and a Dusky Redshank (*T. erythropus*), and the former was seen again on the following day. It is interesting to compare these records with Mr. J. F. Thomas' winter flock of Black-tailed Godwits in Caermarthenshire (*antea*, p. 312).

H. G. ALEXANDER.

YELLOWSHANK IN LINCOLNSHIRE.

ON September 15th, 1932, an example of the Yellowshank (*Tringa flavipes*) was shot by Mr. J. H. Stubbs at his plover decoy pool in Tetney Cow Marsh. He recognized the bird as a stranger by its note, which was quite new to him. The bird was apparently by no means shy, as after he had missed a double shot at it, it allowed him to call it back by the imitation of its note. I did not hear of the occurrence for some days and therefore did not see the bird in the flesh. When I saw it at the Louth bird stuffer's it was much covered with string and wrappings, but its very long thin legs and noticeably slender bill were characteristic. The legs were pale yellow and the bill black. The measurements taken from the stuffed and cased bird are as follows : Bill 35 mm., tarsus 57 mm., wing 151 mm. The carpal joint appeared to be slightly distorted and I think the wing would have measured 2 or 3 mm. more in the flesh. G. H. CATON HAIGH.

ICELAND GULL IN GLOUCESTER AND SOMERSET.

SEVERAL members of the Ornithological Section of the Bristol Naturalists' Society have been fortunate in seeing an Iceland Gull (*Larus leucopterus*) on the River Avon, near Ashton swing bridge. It was first noticed by Mr. L. H. Matthews on January 27th, 1933, and again on the 30th, but not sufficiently close to identify it.

On February 2nd Mr. W. R. Taylor saw it at close range, as I did on the following day. It was seen flying over the river by Mr. H. H. Davis and myself on the 5th, and again on the 9th by the same two observers, under excellent conditions, as it was resting on some wooden staging, while my wife and I had a close view of it on the 11th, as did Mr. J. H. Savory on the 13th.

The following notes are the result of joint observations on the dates mentioned.

In size it was the same as the Herring-Gull, though not so bulky, but on the wing it had the same broad wings and slow flapping flight of that bird. And, in this respect, we should not agree with the description of "narrow" wings given by the late Mr. T. A. Coward in *Birds of the British Isles* (Vol. II., p. 220). There was no "angling" of the wings when the bird was in the air. At rest, the wings projected considerably (about two inches) beyond the end of the tail. In flight, the white primaries stood out conspicuously from the creamy upper surface when the bird was seen from above.

The legs and feet were flesh-pink, and the beak was pale yellowish-pink at the base with a black (or dark brown) end forming about half of it. The eye was dark brown.

As the bird was, on February 3rd, seen at various times settled on both banks of the Avon, which forms the boundary between Gloucestershire and Somerset, both counties can claim this record.

H. TETLEY.

[Mr. K. B. Rooke also writes that this bird has been frequenting Bristol Docks and was seen by him on February 12th and 19th. He adds that at close quarters grey-brown markings were visible on the mantle and breast.—F.C.R.J.]

GREAT SKUA IN CHESHIRE.

ON October 3rd, 1932, Mr. A. Baker, of West Kirby, Cheshire, brought to the Liverpool Museum for identification a Great Skua (*Stercorarius skua*), which he had procured that morning on Burton Marsh, Cheshire. When crossing the marsh on the previous afternoon he had observed this brown gull-like bird attacking a wounded Mallard. An internal examination of the Skua showed the gullet and stomach packed with flesh and feathers. The latter, when washed and cleaned, were identified as those of a Mallard and pigeon.

The Great Skua, which proved to be a female, is the fifth recorded in Cheshire. (*Check List of the Fauna of Lancs. and Cheshire*, 1930.)

R. K. PERRY.



LETTERS



WOODPECKERS DRINKING AND BATHING.

To the Editors of BRITISH BIRDS.

SIRS,—It may be worth recording in connexion with the correspondence on this subject (*antea*, pp. 257-315) to state that in *Wild Exmoor through the Year* I reported a Great Spotted Woodpecker (*Dryobates m. anglicus*) drinking and bathing at a bird bath. I am informed that lately the bird has been seen drinking even more frequently.

E. W. HENDY.

SIRS,—My wife and I have for several years past had frequent opportunities to watch one or other of four Green Woodpeckers (*Picus v. virescens*) commonly about our garden, drinking, and occasionally bathing, in the lily pools.

H. M. LIVENS.

TOTLAND BAY, I.O.W.

POMATORHINE SKUAS IN WEST AFRICAN WATERS.

To the Editors of BRITISH BIRDS.

SIRS,—On a recent voyage from England to West Africa I saw no Pomatorhine Skuas (*Stercorarius pomarinus*) until we were off the coast of Senegal (17.0 N., 17.30 W.). At this point, on January 24th, 1933, we met considerable numbers, and there were always from one to thirty following the ship during the next two days, that is to say, until we reached Freetown. The distance from the first point to the last is about 700 miles. After Freetown very few of these birds were seen, and none at all after Monrovia. But apart from those which followed the ship we often saw parties of half a dozen sitting on the water, and altogether many hundreds must have been passed. None of the birds seemed to be feeding, either behind the ship or on the surface of the sea, and there were no other sea birds for them to rob. Three-quarters of the birds seen were adult, and there was about one dark adult for seven pale ones.

It is well known that this bird passes far south of the equator in winter, but I think that records of its being seen in numbers are not common. A number of isolated West African records are quoted by Bannerman (*Birds of Trop. W. Africa*, Vol. II., p. 225).

P. A. BUXTON.

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NOTES ON COOTS.

BY

HAROLD J. BURKILL, M.A., F.R.G.S.

IN 1932 many more nests of the Coot (*Fulica a. ater*) were built on Fetcham Pond, Leatherhead, than I had seen in the previous five years in which I have had the pond under observation. In 1930 there were six nests with 15 young; in 1931 ten nests with 12 young, 9 of which came from one nest in three broods. This last year twenty-seven nests were built, eighteen of which produced 61 young, the other nests being abandoned or else unproductive.

The vegetation in the pond was thicker and it was not possible to watch the broods as fully as in recent years. A greater area was covered with weed, from which the nests and the sitting birds usually showed up. This extra growth was probably due to the mild winter, as the water was never really chilled, the only cold spell of weather coming towards the end of February. The temperature of the water was also probably responsible for an early nest, as one pair of birds began to build on February 15th. The cold spell then came and the birds suspended operations till March 3rd, when they appeared to complete the structure, but it was never used, and on March 29th the birds removed some of the material to form a fresh nest a few yards away, while a Swan completed the dismantling by standing on the old structure and trampling it down into the water.

There were more birds on the pond during the winter than in previous years and my figures gave me a daily average for January of 49.93, for February 58.50, with then a drop in March to 39.17. In the autumn the numbers rose again to 49.69 in November and 51.66 in December. This shows that a good deal of migration takes place, and in the spring the younger birds, not yet a year old, seem to leave the pond, but they apparently always travel by night as only short flights over the pond are to be seen by day.

Nest-building became fashionable in March, as six nests were completed that month, eleven more in April, seven fresh ones were noted in May and three more in June. From these twenty-seven nests I was able to observe young hatched out on seventeen, a much better result than in 1931, but the mortality of the young is very heavy, probably owing to some pike, which can be seen from time to time resting quietly in the deeper hollows where the springs that supply the pond well up.

Nests were built which were not used for oviposition, though the birds might sit in them before laying in a nest built after they had tested the first one. Nest No. 5 on my chart was built on March 5th, close to the path, and here six young were seen on April 23rd. Only one of the chicks survived more than three weeks. On May 9th the parents built No. 21. One or other tested it by sitting in it from the 11th to the 19th, and then on the 20th they built a third nest, while their second nest was used as a nursery for the survivor of the brood, then in the white-fronted stage, which was seen sitting in the nest on May 20th, 23rd, 25th and 26th. From the third nest a brood of five young appeared on June 27th. All these three nests were high out of the water, and were similar in style of construction, the materials being bent round as if an attempt at weaving the leaves and stems into position had been made, instead of being just laid across each other on the nest as seems usual. There were only two other high nests to be seen, one of which I shall have occasion to refer to later.

Owing to this practice of the birds sitting in nests before laying it is not possible to check the exact period of incubation for each nest, but my figures led me to conclude that the time was about 33 to 38 days, though there was one nest which did not produce young until 61 days after it was first sat upon, but the birds were 32 days before they sat regularly. Five pairs built under the willows by the island. Three of them failed to hatch out any young. One nest was occupied before the leaves appeared on the bushes, so it got a moderate amount of sun, and here four young were seen 38 days after the parents were observed to sit. The other successful one was in thick shade, and here the parents sat for 53 days before three young appeared.

Though there were twenty nests in operation at the maximum period, I never saw more than eleven birds sitting at once, thus showing that the eggs are left uncovered frequently. Of course my morning observations never lasted more than a few minutes, just as I passed.

One pair of birds built on the north side of the pond near the Mill House at the end of April, and one parent was sitting on May 4th. On May 12th they were seen carrying the materials of the nest across the pond to build a new nest in the reeds there. I observed one bird sitting on May 14th, 18th, 19th, 20th, 23rd, 24th, 25th, 26th, 27th and June 6th, while one young was seen on June 15th, but the same day the

parents removed to a third nest some two yards away across a narrow lane of water through the reeds. Here they sat on June 15th, 16th, 17th and 23rd, and on the 24th I saw them out with four young. They must have moved these chicks from one nest to another as soon as they were hatched.

For 1931 I recorded (*London Naturalist*, 1931, p. 62) a brood hatched out about July 20th, but in 1932 there was evidently a much later incubation, as on October 22nd I saw a young bird in the white-throated stage being fed by a parent. I saw the bird afterwards on three different days. It could not have been more than a month old, so a pair of birds were evidently sitting in September. The pond vegetation had by then become so thick that I had no record of any nest being occupied after July 6th, except that in August a course of instruction in nest-building was given by a pair to their young, a brood hatched out early in June. My note-book contains the following references to this.

August 11th. Coots have built up nest No. 24 to about twice its previous size. There are frequently three young and one parent on it.

August 12th. Male Coot carrying building material to the nest where one three-quarter grown young was standing.

August 15th. The female Coot was on the nest this evening putting reed stems in place, while the male was driving away young ones of a different brood, not as big as his family.

August 16th. Four young Coots on the nest while one of the parents was bringing more material to it.

August 17th. Three young Coots on the nest which has been trampled down considerably.

August 18th. The female parent building up the nest while one of the young is sitting inside it.

August 29th. The female parent busy building up the nest with reeds. I saw her place four pieces in position as I passed in the morning. The smallest young one was on the nest with her. In the evening the chick was still there, but the parent was away twenty yards off in the reeds. The nest had been piled up a good deal in a central dome with fresh reeds, with the old ones as a platform all round. The platform is some ten feet in diameter and the dome two and a half feet in diameter, being about two feet high.

August 30th. No Coots on No. 24.

August 31st. The big nest has been trampled down a lot.

September 1st. Only one young Coot on the big nest this morning.

September 2nd. No. 24 almost flattened out. One young on it.

September 13th. The nest a flattened mass, ten feet in diameter, which gradually subsided into the water as the vegetation died down.

Different broods of young belonging to the same parents will feed together in company with their parents, the chicks of the first brood looking after themselves while the second lot are fed by the parents. Only once have I seen an elder chick give food to one of the younger family.

On July 26th I saw a youngster punished by its mother for what one might almost say was impertinence. The female with two chicks was feeding close to the bank, and both the young were calling for food, and as far as I could tell both were saying the same thing, but the mother did not think so. She was in between the two, and after a sharp turn towards the left one and a threatening movement she paddled on in the van, but the youngster apparently repeated the remark which brought the parent after him. He fled squeaking, only to be overtaken and pecked twice on the back of the head. After a few more squeaks, gradually dying down, he resumed his place close to the mother and continued feeding.

Mr. Coward (Vol. II., p. 333) says "the nestling has a faint whispering pipe". I think this must be rarely uttered as I have only once heard it. Close to the pond path there has been for the past two seasons a log, 10 feet long, part of a trunk of a willow tree, floating in the water, which the parents teach the young to climb on to. The rough bark gives them a good foothold, and there are frequently three or four birds to be seen there, the youngsters looking very "leggy" as they balance with the aid of their stumpy wings. On the morning of July 16th as I passed, two young Coots still in the black downy stage were on the log and both gave utterance to a thin whistle of four or five notes, one of them repeating it once.

One morning three young Coots climbed out of the water on to the log, when an older but still immature bird already on the log just stepped forward and caused the log to roll, so precipitating the three new-comers into the water. The older one retained its balance and the whole action looked just like that of a mischievous schoolboy playing a prank on his fellows.

Some of the so-called fighting may possibly be only a means of letting off energy, and very often resembles a game of "cross-tig." The birds are gathered together by visitors who come to feed them, and then when all the food has been eaten

the birds swim about in a party of twenty or more. Suddenly one bird will make a rush at another and is itself attacked by a third, while the second, dodging the rush of the first, goes after a fourth. This process goes on until the whole number seem to be rushing about after each other, but blows are not given and individual conflicts do not occur.

The definite fights are quite different when two birds face each other, often sitting up on their tails and battling with wings, feet and beaks. The females seem more often to engage in these than the males do, but sometimes an engagement becomes quite a family affair, in which immature members are anxious to take part. One of the biggest scraps I saw was on September 2nd, when there was a prolonged fight between two lots. Three adult females were attacking one male when I first got close to them. Two young which I took to be a male and a female about three-quarters grown hurried to the help of the male, both squeaking hard as if in trouble, but when they got near the fight both dived and went some six yards under water, coming up just in front of the foe. They were at once joined by an adult female, who came with a rush of twenty yards over the water to charge the opposition. The attack was successful, and after a bout of sparring and splashing lasting some half-minute the three adult females withdrew.

The moment a fight is over there seems no malice left and the birds will frequently feed side by side, but I saw one fight where the Coot was not satisfied until he had cleared the field. This was on May 14th in the evening. There were fourteen Swans, including the six cygnets of the previous year. A Coot was attacking the Swans, chiefly the young ones, chasing and flying at them, and pecking their bodies behind the wings. Once a Swan turned as if to strike with its bill when it was being pursued, but the Coot sheered off and then resumed a stern chase. It drove them away after an interval of neutrality in which it trimmed its plumage. The only Swan that showed any opposition was an old male. I could not see what had started the combat, but there was a female Coot sitting on a nest some little distance away.

Just after I had written the above in my note-book the Coot resumed the attack and, singling out the cygnets, went for them until they flew off down the pond. They flew some two hundred yards, flapping heavily, and then took to the water again. I went back to where they had settled to make sure they were the cygnets.

On September 12th I saw a Coot routed by a pair of Little Grebes for coming too close to their young. As the Coot entered an open stretch of water where the Grebes were feeding it was promptly attacked by the latter, one of which dived and came up underneath, apparently ramming the Coot, which seemed bewildered, spun round twice, and then fled out of the clearing into the weeds.

A week before I had seen a female Little Grebe with two young which were only a few days old, so these birds, like the Coots, had evidently hatched out a late brood.

Coots will frequently chase the Moorhens but the latter get away by running over the reeds which support their weight but sink under the pursuers. The Moorhens, when chased, show the white feathers conspicuously, just as they do when calling to their young to follow them, so that if this action is one for the guidance of the offspring when going through the narrow channels, and is produced by maternal solicitude, it seems as if it is also induced by excitement of a different nature, as the pursued would hardly wish to give a guide to the pursuer.

RECOVERY OF MARKED BIRDS.

NOTE.—Birds re-trapped and released again are omitted here and will be published in a separate list.

(Concluded from page 334.)

No.	Place and Date Ringed.	Place and Date Recovered.
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CORMORANT (*Phalacrocorax c. carbo*).

109436	Badcall Is. (Suth.), 27.6.32, young, by E. C. Sharp.	Near Culross (Fife), 10.12.32, by K. Tullis.
109439	Ditto 27.6.32.	Near Dalcross (Inverness.), 11.3.33, by W. Munro.
109445	Ditto 27.6.32.	W. Coast, Harris (Outer Heb.), 20.1.33, by J. Mac- Cuish.
102335	Mochrum (Wigtown), 25.6.29, young, by Lord D. Crich- ton-Stuart.	Wells (Norfolk), 24.2.33, by F. Taylor.
108109	Dulas I. (Anglesey), 10.7.31, young, for Lt.-Col. Pollitt.	Near Llanelly (Carms.); 3.1.33, by Ll. Rees.
107521	Ditto 22.6.30.	Loctudy (Finistère), France, —11.30, by J. de Poul- piquet.
105115	Tenby (Pembs.), 25.6.31, young, by W. D. Shaw.	Val André (Côtes-du-Nord), France, 20.9.32, per <i>Chas- seur Français</i> .
108328	Sheep I. (Antrim), 14.5.32, young, by J. Cunningham.	Fouesnant (Finistère), France, 13.11.32, by J. de Poulpiquet.

SHAG (*Phalacrocorax a. aristotelis*).

108913	Handa I. (Suth.), 25.6.32, young, by E. C. Sharp.	Loch Nevis (Inverness.), —11.32, by D. McDon- nell.
108922	Ditto 25.6.32.	Scalpay, I. of Skye, 26.1.33, by C. Mackinnon.
109463	Ditto ad., 28.7.32.	Loch Polteit, I. of Skye, —1.33, by N. Martin.
109481	Ditto young, 28.6.32.	Castlebay, I. of Barra (Outer Heb.), —11.32, by J. Cameron.
109497	Ditto 28.6.32.	W. Coast, I. of Lewis (Outer Heb.), —2.33, by J. Morrison.
109473	Ditto 28.6.32.	Arisaig (Inverness.), 10.3.33, by A. M. McKenzie.
109401	Ditto 26.6.32.	Latheron (Caithness), 6.3.33, by W. MacDonald.

WOOD-PIGEON (*Columba p. palumbus*).

RR.3925	Scone Estate (Perths.), 9.5.30, young, by Lord Scone.	Near where ringed, 2.7.31, by ringer.
RR.3931	Ditto 9.5.30.	Ditto 10.7.31.
RR.8627	Ditto 10.5.30.	Ditto 2.7.31.

No. Place and Date Ringed. Place and Date Recovered.

GOLDEN PLOVER (*Charadrius a. apricarius*).

R.3557 Logiealmond (Perths.), Stanley (Perths.), 20.11.32,
28.5.32, young, by Lord by J. Graham.
Scone.

LAPWING (*Vanellus vanellus*).

R.9377 Altnaharra (Suth.), 19.6.30, Fermoy (Cork), —.2.33, by
young, by Mrs. Evetts. Mrs. Hallinan.
R.3483 Redgorton (Perths.), 27.5.32, Waterville (Kerry), 26.1.33,
young, by Lord Scone. by H. H. Chantler.
AN.5389 Near Perth, 6.6.32, young, Loughill (Limerick), 23.11.32,
for Perth N.H.S. by T. Noonan.
R.7310 Balfron (Stirlings.), 31.5.32, Cappagh (Waterford),
young, by Sir S. Bilsland. 29.1.33, by Mrs. Ussher.
Y.7652 Glenorchard (Stirlings.), Where ringed, —.12.32, by
8.6.25, young, by J. Bar- ringer.
tholomew.
AN.4114 Harper Rig (Midlothian), Near Oporto (Portugal),
17.6.32, young, for Inver- 25.12.32, by G. M. Tait.
leith F.C.
W.9705 Kilmaronock (Dumbarton), Brucee (Limerick), 10.2.33,
29.5.27, young, by T. by N. Dollery.
Kerr.
T.6427 Kirkconnel (Dumfries.), Waterford, 10.12.32, by M.
21.6.29, young, by T. K. Forristal.
Craven and W. Bone.
U.3914. Ditto 17.5.28. Thurles (Tipperary), 28.1.33,
by J. M. Ryan.
S.1774 Penrith (Cumb.), —.5.29, Gretna (Cumb.), 4.1.33, by
young, by H. J. Moon. L. Atkinson.
U.4946 Ditto —.5.29. Kildalkey (Meath), 10.1.33,
by J. McMahon.
RR.3319 Ditto —.6.30. Malahide (Dublin), 12.1.33,
by J. P. Phipps.
RR.6026 Langwathby (Cumb.), 9.6.28, Near Southwaite (Cumb.),
young, by H. J. Moon. —.1.33, by W. Gill.
U.8444 Ditto —.5.30. Clonmel (Tipperary), 29.1.33,
by T. O'Gorman.
U.5095 Ullswater (Cumb.), —.5.28, Newmarket (Cork), 26.11.30,
young, by H. J. Moon. by D. Cronin.
R.9534 Tebay (Westmor.), —.6.30, Enniscorthy (Wexford),
young, by H. J. Moon. 27.1.33, by G. Maher.
RR.6093 Kirkby Lonsdale (Westmor.), Kilmanagh (Kilkenny),
—.5.30, young, by H. J. 15.1.33, by W. F. Ryan.
Moon.
RT.3167 Orton (Westmor.), —.6.32, Oporto, Portugal, 29.1.33,
young, by H. J. Moon. by D. Souza Prata.
AP.852 Carnforth (Lancs.), —.5.32, Near Oporto, Portugal,
young, by H. J. Moon. 31.1.33, by W. A. Tait.
AP.3571 Whitewell (Lancs.), —.6.32, Near Cork, 4.1.33, by Mrs.
young, by H. J. Moon. Coughlan.
AP.3407 Ingleton (Yorks.), —.6.32, Where ringed, 28.2.33, per
young, by H. J. Moon. *Shooting Times*.

No.	Place and Date Ringed.	Place and Date Recovered.
LAPWING—(continued).		
W.5513	Cranage (Ches.), 12.5.28, young, by A. W. Boyd.	Fafe (Minho), Portugal, Winter 1932-33, by E. Padrao.
86378	Kenfig (Glam.), 11.6.22, juv., by C. M. Acland.	Margam (Glam.), —.10.31, by H. E. David.
REDSHANK (<i>Tringa t. totanus</i>).		
X.2525	Ulverston (Lancs.), 7.6.27, young, by C. F. Archibald.	Near where ringed, —.12.32, by T. J. Chadwick.
MF.905	Ribblehead (Yorks.), —.6.32, young, by H. J. Moon.	Near Ulverston (Lancs.), —.10.32, by S. Newby.
R.9741	Winchelsea (Sussex), 27.6.31, young, by B. T. Brooker.	River Crouch (Essex), 10.12.32, by A. W. Moss.
CURLEW (<i>Numenius a. arquata</i>).		
AL.215	Ingleton (Yorks.), —.6.32, young, by H. J. Moon.	Near Preston (Lancs.), 1.2.33, by W. Sutton.
SNIPE (<i>Capella g. gallinago</i>).		
J.2393	Shap (Westmor.), —.5.32, young, by H. J. Moon.	Dingle Pena. (Kerry), 20.11.32, by W. Benner.
WOODCOCK (<i>Scolopax r. rusticola</i>).		
P.3642	Glamis (Angus), 22.6.32, young, by T. L. Smith.	Cockburnspath (Berwicks.), 8.12.32, by D. S. Milne.
P.4312	Near Brechin (Angus), 12.5.31, young, by Lord Scone.	Where ringed, 31.8.31, by ringer.
P.4330	Near Coupar-Angus, 7.7.31, young, by Lord Scone.	Inchtute (Perths.), 15.12.32, by ringer.
S.9332	Redgorton (Perths.), 12.6.30, young, by Lord Scone.	Glen Dye (Kincardine), 21.1.33, by Col. Beddington.
R.3495	Ditto 3.7.32.	Fermoy (Cork), 29.12.32, by Brig.-Gen. Bond.
S.7917	Scone Estate (Perths.), 5.7.32, young, for Lord Scone.	Near where ringed, 5.11.32, by J. M. Morison.
P.4644	Ditto 11.5.31.	Co. Clare, 17.12.32, by C. B. Wallis.
S.7689	Cowhill (Dumfries.), 30.6.30, young, by Lord Scone.	Where ringed, 12.11.32, by J. Milligan.
U.1411	Auchen Castle (Dumfries.), 6.5.28, young, for Lord Scone.	Near Moffat (Dumfries.), 3.10.32, by E. Griffin.
AP.965	Kirkmichael (Dumfries.), 13.6.32, young, for W. and A. B. Duncan.	Tinwald (Dumfries.), 7.1.33, by S. Carr.
AP.971	Ditto 1.5.32.	Kirkland (Dumfries.), 22.9.32, by M. Waddell.
AN.9913	Cairnsmore (Kirkcudbr.), 29.4.32, young, for Col. Blair Imrie.	Ardwall (Kirkcudbr.), 17.11.32, per <i>The Field</i> .

No. *Place and Date Ringed.* *Place and Date Recovered.*

WOODCOCK—(*continued*).

Y.6387	Balmacellan (Kirkcudbr.), 12.6.31, young, by R. Shepley Shepley.	Parton (Kirkcudbr.), 14.11.32, by Col. Knowles.
V.6755	Alnwick (Northumb.), 28.4.31, young, by Duke of Northumberland.	Near Ingram (Northumb.), 30.1.33, by C. F. Drew-Wilkinson.
U.7749	Holker (Lancs.), 13.5.29, young, for Col. Porritt.	Graythwaite (Lancs.), 21.1.33, by Maj. Sands.
S.6162	Abbeystead (Lancs.), —.5.31, young, by H. W. Robinson.	Scorton (Lancs.), 22.12.32, per <i>The Field</i> .
S.6166	Ditto —.6.31.	Scrag Dingle (Kerry), 27.11.32, by J. Griffin.

SANDWICH TERN (*Sterna s. sandvicensis*).

W.4636	Farne Is. (Northumb.), 26.6.26, young, by Mrs. Hodgkin.	Ayamonte (Huelva), Spain, 6.11.32, by Foreign Office.
NF.600	Ravenglass (Cumb.), 19.6.32, young, by R. H. Brown.	Dakar, Senegal, Winter, 1932-33, J. Mélis.
AN.8985	Salthouse (Norfolk), 20.6.32, young, by H. C. R. Gillman.	St. Pol-sur-Mer (Nord), France, 4.9.32, per <i>Chasseur Français</i> .

LESSER BLACK-BACKED GULL (*Larus fuscus graellsii*).

AH.763	Foulshaw (Westmor.), 21.7.30, young, by H. W. Robinson.	Estepona (Malaga), Spain, 13.11.32, by I. Gavira.
AA.3090	Walney I. (Lancs.), 8.7.32, young, by H. W. Robinson.	Ile du Pilier (Vendée), France, —.10.32, per <i>Chasseur Français</i> .
AA.3235	Ditto 10.7.32.	Near Oporto, Portugal, —.10.32, by H. W. Coverley.
AA.1341	Ditto 6.6.32.	Near Oporto, Portugal, 23.10.32, by C. H. Physey.
AM.197	Ditto 28.6.31.	Monte Gordo (Algarve), Portu- gal, —.1.33, by Dr. R. Drost.

KITTIWAKE (*Rissa t. tridactyla*).

RS.1360	Farne Is. (Northumb.), 2.7.30, young, by Mrs. Hodgkin.	Where ringed, —.7.32, by Sec., Farne Is. Ass.
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PUFFIN (*Fratercula a. grabæ*).

CA.2	Orkney, —.5.30, ad., by H. W. Robinson.	Where ringed, Summer, 1932, by ringer.
CA.58	Ditto —.5.30.	Ditto Summer, 1932.
CA.173	Ditto —.5.30.	Ditto Summer, 1932.

COOT (*Fulica a. atra*).

RT.1273	Isle of Sheppey (Kent), 15.8.32, young, by W. A. Cadman.	Teynham (Kent), 9.1.33, by C. Crafter.
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MOVEMENTS OF RINGED BIRDS FROM ABROAD TO THE BRITISH ISLES AND FROM THE BRITISH ISLES ABROAD.

ADDENDA II.

BY

H. F. WITHERBY AND E. P. LEACH.

This is a continuation of our series of articles under this heading in Volume XXV.*, and contains all the records which have come under our notice since then, and of which we have been able to obtain details. We have again to express our great indebtedness to many correspondents and to the various ringing stations concerned, of which a list was given in our first article. To this list we now have to add the three new stations set out below.

It will be noticed that among the records there are a number of interesting ones of birds ringed in Iceland, and for knowledge of these we are chiefly indebted to a list published by Mr. P. Skovgaard in *Danske Fugle*, Volume IV.

<i>Abbrevia- tion used.</i>	<i>Inscription on Ring.</i>	<i>Organization.</i>	<i>Director.</i>
<i>C.</i>	Zoological Museum, Copenhagen, Den- mark.	Zoological Museum, Copenhagen, Den- mark.	R. Hörring.
<i>La</i>	Université Lithuanie.	Zool. Institut der Universität Vytau- tas Kaunas, Lith- uania.	Prof. T. Ivan- auskas.
<i>Rk.</i>	Mus. Nat. Reykjavik.	Natural History Mu- seum, Reykjavik, Iceland.	M. Björnsson.

ROOK (*Corvus f. frugilegus*), pp. 113, 357.

The only other ringed Rooks from breeding-places were from Hannover and these eastern records are of value.

RINGED ABROAD IN BREEDING-SEASON.

	<i>Ringed.</i>	<i>Recovered.</i>
<i>Ld.</i> D4362	Nr. Leningrad, Russia, Spring, 1932.	Norfolk 7.2.33.
<i>La.</i> D86	Raseiniai, Lithuania 24.5.31.	Ditto 29.10.31.

For previous parts see Vol. XXV., pp. 110-128; 174-192; 245-268; 357-360.

. STARLING (*Sturnus v. vulgaris*), pp. 113, 357.

RINGED ABROAD AS YOUNG OR IN BREEDING-SEASON.

<i>Ringed.</i>			<i>Recovered.</i>	
<i>Hs.</i> A9455	Joensuu, E. Finland	2.6.32.	Norfolk	22.12.32.
<i>Hs.</i> A8038	Säkkijärvi, S.E. Finland	1.6.32.	Berks.	5.12.32.
<i>Hs.</i> A8205	Nr. Helsingfors, Finland	—.6.32.	Hunts.	4.2.33.
<i>Ra.</i> 38062	Livonia, Latvia	8.6.31.	Banff.	—.9.32.
<i>Ra.</i> 43190	Ditto	6.6.32.	Wilts.	7.1.33.
<i>La.</i> F454	Radviliskis, Lithuania	1.5.31.	Devon.	26.1.33.
<i>La.</i> F2526	Birzai, Lithuania	22.5.32.	Cornwall	22.11.32.
<i>R.</i> F53843	Brandenburg, Germany	22.5.32.	Essex	—.11.32.
<i>R.</i> F69438	Mecklenburg, Germany	29.4.31.	Gloucester	—.4.32.
<i>H.</i> 613982A	Westphalia, Germany	28.5.32.	Berks.	20.1.33.
<i>H.</i> 613956A	Ditto	28.5.32.	Devon.	2.11.32.
<i>H.</i> 682821	Hannover, Germany	29.5.32.	Glamorgan	—.12.32.
<i>R.</i> F115566	Bremen, Germany	1.6.32.	Suffolk	27.2.33.
<i>G.</i> 65133	Scania, Sweden	3.6.30.	Glamorgan	15.12.31.
<i>Sk.</i> T1056	Jylland, Denmark	2.6.31.	Yorks.	23.12.31.
<i>Sk.</i> T6717	Ditto	25.5.32.	Montgomery.	9.2.33.
<i>Sk.</i> H647	Fyen, Denmark	3.6.27.	Limerick	ca. 1.5.32.
<i>Sk.</i> T6514	Sjælland, Denmark	28.5.32.	Lancs.	26.1.33.
<i>Sk.</i> G7047	Ditto	22.5.30.	Warwicks.	8.11.32.
<i>Sk.</i> G11969	Ditto	30.5.30.	Suffolk	26.10.31.
<i>Sk.</i> H11108	Ditto	31.5.30.	Cork	29.1.31.
<i>Sk.</i> G1322	Bornholm, Denmark	1.6.29.	Somerset	—.3.31.
<i>R.</i> F69214	Hamburg, Germany	24.5.31.	Merioneth.	9.11.32.
<i>H.</i> 602646A	Oldenburg, Germany	30.5.32.	Dorset.	12.1.33.
<i>H.</i> 627394A	I. of Mellum, North Sea	18.7.32.	Cornwall	16.11.32.
<i>L.</i> 100365	Ameland, W. Frisian Is.	8.6.31.	Yorks.	23.12.31.
<i>L.</i> 82401	Ditto	28.5.30.	Lincs.	7.3.31.
<i>L.</i> 57520	Friesland, Holland	2.6.29.	Somerset.	—.2.33.
<i>L.</i> 97251	Zuid Holland	16.4.31.	Gloucester.	—.10.31.
<i>L.</i> 99652	Utrecht, Holland	23.5.31.	Cornwall	19.10.31.

RINGED ABROAD, UNCERTAIN WHERE BREEDING.

<i>Ringed.</i>			<i>Recovered.</i>	
<i>H.</i> 62921A	Pomerania, Germany	16.10.31.	Devon.	—.12.31.
<i>H.</i> 734972	Heligoland	26.10.32.	Cheshire	28.1.33.
<i>H.</i> 735444	Ditto	28.10.32.	Lincs.	12.1.33.
<i>H.</i> 735588	Ditto	29.10.32.	Norfolk	15.12.32.
<i>H.</i> 735536	Ditto	29.10.32.	Hunts.	19.1.33.
<i>H.</i> 509950	Ditto	3.11.26.	Sussex	5.11.29.
<i>H.</i> 527754	Ditto	25.10.27.	Kilkenny	22.2.32.
<i>L.</i> 102379	Texel, Holland	7.11.31.	Berks.	—.1.33.
<i>L.</i> 102883	Zuid Holland	27.10.31.	I. of Man	15.3.32.
<i>L.</i> 90460	Ditto	29.10.30.	Hampshire	16.3.31.
<i>L.</i> 106702	Ditto	29.11.32.	I. of Wight	28.12.32.
<i>L.</i> 88936	Ditto	14.10.30.	Somerset.	16.2.31.
<i>L.</i> 89096	Ditto	15.10.30.	Devon.	7.3.32.

RINGED GREAT BRITAIN AS WINTER VISITORS OR MIGRANTS AND
RECOVERED ABROAD IN BREEDING-PLACE.

<i>Ringed.</i>		<i>Recovered.</i>	
Oxford	25.11.30.	East Prussia	7.5.32.
Ditto	26.11.30.	Pomerania, Germany	11.7.32.
Cheshire	20.12.31.	Mecklenburg, Germany	—.6.32.

STARLING—(continued).

RINGED GREAT BRITAIN AS WINTER VISITORS OR MIGRANTS AND
RECOVERED ABROAD IN BREEDING-PLACE.

<i>Ringed.</i>		<i>Recovered.</i>	
Worcester	5.2.31.	Hordaland, Norway	Summer, 1932.
*Cheshire	19.12.31.	Gotland, Sweden	—7.32.
Somerset	28.2.32.	Scania, Sweden	6.7.32.
Cheshire	30.3.32.	Jylland, Denmark	25.5.32.

SISKIN (*Carduelis spinus*), p. 357.

This is the second record of a Siskin ringed abroad as a migrant, but we have none from breeding-places.

RINGED ABROAD AS MIGRANT.

<i>Ringed.</i>		<i>Recovered.</i>	
L. 02734	Zuid Holland	19.10.31.	Worcester. 16.2.32.

LINNET (*Carduelis c. cannabina*), pp. 117, 357.

This record was overlooked in our first list.

RINGED GREAT BRITAIN AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Warwicks.	26.5.11.	Gironde, France	25.10.11.

CHAFFINCH (*Fringilla c. cælebs*), p. 118.

RINGED ABROAD, BREEDING-PLACE UNCERTAIN.

<i>Ringed.</i>		<i>Recovery.</i>	
L. 90355	Zuid Holland	22.10.30.	Lincs. 5.4.31.

TREE-PIBIT (*Anthus t. trivialis*), p. 119.

RINGED GREAT BRITAIN AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Yorks.	—6.31.	Gironde, France	18.9.32.

YELLOW WAGTAIL (*Motacilla f. rayi*).

This is the first Yellow Wagtail ringed in this country which has been reported from abroad.

RINGED GREAT BRITAIN AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Yorks.	—6.32.	Landes, France	31.8.32.

PIED WAGTAIL (*Motacilla a. yarrellii*), p. 120.

RINGED GREAT BRITAIN AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Yorks.	—6.32.	Landes, France	13.10.32.

BRITISH SONG-THRUSH (*Turdus ph. clarkei*), pp. 122, 358.

RINGED GREAT BRITAIN AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Norfolk	18.4.32.	Antwerp, Belgium	25.9.32.

*Corrected date of recovery; originally given as —.10.32. See Vol. XXVI., p. 208.

ICELAND REDWING (*Turdus m. coburni*).

This record is interesting as being the first ringed example of this subspecies recorded from the British Islands.

Attention may here again be called to the record under Redwing on page 358 of Vol. XXV., this being an error for Song-Thrush.

RINGED ABROAD AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>
Sk. 26553	S.E. Iceland	20.6.30.	Donegal 9.4.32.

BLACKBIRD (*Turdus m. merula*), pp. 124, 358.

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
Sk. T3867	Jylland, Denmark	15.6.32.	Yorks. 24.1.33.

RINGED ABROAD, BREEDING-PLACE UNCERTAIN.

	<i>Ringed.</i>		<i>Recovered.</i>
L. 98376	Friesland, Holland	1.1.32.	Northumberland 4.12.32.

RINGED ABROAD, PROBABLY AS MIGRANTS.

	<i>Ringed.</i>		<i>Recovered.</i>
H. 735367	Heligoland	28.10.32.	Lancs. 14.2.33.
H. 729155	Ditto	29.9.32.	Antrim 28.1.33.

RINGED GREAT BRITAIN AS WINTER VISITOR OR MIGRANT.

	<i>Ringed.</i>		<i>Recovered.</i>
Perthshire	8.2.30.	Schleswig-Holstein	26.9.31.

This is only the second ringed British-bred Blackbird reported from abroad.

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>
Sussex	26.4.31.	Morbihan, France	Winter, 1931-32.

SWALLOW (*Hirundo r. rustica*), p. 127.

All these records have interest and especially perhaps that from so far to the east in France as the Pyrénées Orientales.

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
Essex	17.6.32.	Oise, France	—10.32.
Surrey	14.8.27.	Pyrénées Orientales, France	—10.32.
Norfolk	1.7.32.	Natal, S. Africa	31.1.33.
Warrnambool	4.8.28.	Griqualand East, S. Africa	15.1.33.

MERLIN (*Falco c. aesalon*), p. 358.

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
Sk. 5.91	Arnessysla, Iceland	28.6.32.	King's Co. —12.32.

COMMON HERON (*Ardea c. cinerea*), p. 175.

RINGED ABROAD AS NESTLING.

Ringed.

Recovered.

Sk. R4730	Slesvig, Denmark	31.5.30.	Longford	17.8.31.
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GREY LAG-GOOSE (*Anser anser*).

This and the next are the first ringed geese which have been reported here from abroad.

RINGED ABROAD IN BREEDING-SEASON.

Ringed.

Recovered.

Rk. 2.76	Odadahraun, Iceland	2.8.32.	Inverness.	22.11.32.
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PINK-FOOTED GOOSE (*Anser brachyrhynchus*).

This is an interesting record especially as the Pink-footed Goose has only recently been definitely proved to breed in Iceland (see Congreve and Freme, *Ibis*, 1930, pp. 204-18). Unfortunately, Mr. Skovgaard gives no information as to the conditions under which the bird was captured and ringed.

RINGED ABROAD AS ADULT.

Ringed.

Recovered.

Sk. B580	Husavik, Iceland	24.9.29.	Wexford	12.11.32.
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MALLARD (*Anas p. platyrhyncha*), pp. 177, 359.

RINGED GREAT BRITAIN AS ADULTS IN WINTER.

Ringed.

Recovered.

Norfolk [Hickling]	8.3.30.	N. Finland	6.9.31.
Ditto	8.3.30.	Trondhjem, Norway	Spring, 1932.

RINGED ABROAD AS YOUNG.

Ringed.

Recovered.

Ld. D4005	Lake Ladoga, nr. Leningrad,		
	Russia	9.8.31.	Berwicks. 22.12.31.
Sk. X6822	Husavik, Iceland	10.7.27.	Armagh —.10.29.

GADWALL (*Anas strepera*), p. 179.

RINGED ABROAD AS YOUNG.

Ringed.

Recovered.

Sk. V4778	Husavik, Iceland	4.8.29.	Roscommon 30.1.33.
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TEAL (*Anas c. crecca*), pp. 179, 359.

RINGED GREAT BRITAIN AS ADULTS IN WINTER.

Ringed.

Recovered.

Wigtownshire	7.3.32.	Grudziadz, Poland	15.7.32.
Ditto	18.3.30.	Orebrö, Sweden	22.4.32.

RINGED GREAT BRITAIN, UNCERTAIN WHERE BREEDING.

Ringed.

Recovered.

Cumberland	2.4.32.	Zuid Holland	20.8.32.
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RINGED GREAT BRITAIN AS YOUNG.

Ringed.

Recovered.

Kinross.	20.6.31.	Norrland, Sweden	3.6.32.
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TEAL (*continued*).

RINGED ABROAD AS YOUNG OR IN BREEDING-SEASON.

<i>Ringed.</i>			<i>Recovered.</i>	
Sk. V4409	Saudarkrok, Iceland	28.7.28.	Norfolk	26.12.32.
Sk. V4700	Laxa, Iceland	31.7.29.	Stirling.	31.10.31.
Sk. K8027	Husavik, Iceland	15.7.28.	Cromarty Firth	
			1928 or 1929.	
Sk. V3962	Ditto	25.7.29.	Monaghan	20.11.30.
Sk. V4796	Ditto	27.6.30.	Tipperary	25.2.32.
Sk. V5440	Myvatn, Iceland			
	(breeding adult)	6.6.29.	Kirkcudbright	23.2.32.
C. M314	Sjælland, Denmark	26.6.31.	Cumberland	2.3.32.

RINGED ABROAD FROM DECOYS.

No less than sixty-three Teal ringed at Fanö have now been reported from the British Islands.

<i>Ringed.</i>			<i>Recovered.</i>	
Sk. V6328	Fanö, Denmark	6.9.29.	Ross.	26.8.32.
Sk. M.1512	Ditto	26.10.31.	Argyll.	25.12.31.
Sk. M1251	Ditto	6.10.31.	R. Clyde	5.1.32.
Sk. M.1435	Ditto	20.10.31.	Dumfriess.	4.2.33.
Sk. V6314	Ditto	4.9.29.	Lancs.	15.10.32.
Sk. M.1220	Ditto	1.10.31.	Ditto	23.1.32.
Sk. M.1305	Ditto	11.10.31.	Cheshire	22.12.31.
Sk. M.1643	Ditto	13.11.31.	Salop	12.12.31.
Sk. M.1723	Ditto	28.9.31.	Derby	3.2.32.
Sk. M.1528	Ditto	26.10.31.	Notts.	15.12.32.
Sk. M.1795	Ditto	1.10.31.	Suffolk	7.1.32.
Sk. M.1437	Ditto	22.10.31.	Ditto	29.12.31.
Sk. M1887	Ditto	7.10.31.	Ditto	30.11.31.
Sk. M1510	Ditto	26.10.31.	Ditto	11.1.32.
Sk. M1334	Ditto	12.10.31.	Sussex	28.11.31.
Sk. M1380	Ditto	15.10.31.	Hants.	20.1.32.
Sk. M1170	Ditto	26.9.31.	Dorset.	29.1.32.
Sk. M1256	Ditto	8.10.31.	Ditto	5.12.31.
Sk. M1223	Ditto	1.10.31.	Cornwall	24.12.31.
Sk. M1901	Ditto	8.10.31.	Ditto	10.11.32.
Sk. M1373	Ditto	15.10.31.	Ditto	18.11.31.
Sk. M2046	Ditto	21.10.31.	Pembroke.	29.11.32.
Sk. M1990	Ditto	15.10.31.	Antrim	23.8.32.
Sk. M1441	Ditto	22.10.31.	Fermanagh	12.11.32.
Sk. V6386	Ditto	8.9.29.	Lough Erne	22.10.31.
Sk. M1416	Ditto	20.10.31.	Roscommon	24.1.32.
Sk. M1578	Ditto	27.10.31.	Limerick	27.12.31.
Sk. M1938	Ditto	11.10.31.	Kerry	27.12.31.
L. 47067	Naardemeer, Holland	3.12.29.	Inverness.	3.8.32.

WIGEON (*Anas penelope*), pp. 182, 359.

RINGED ABROAD AS YOUNG.

<i>Ringed.</i>			<i>Recovered.</i>	
Sk. K8026	Husavik, Iceland	15.7.28.	Perthshire	14.9.32.
Sk. V7334	Ditto	26.7.31.	Northumberland	
			5.10.31.	
Sk. V6749	Ditto	20.7.32.	Donegal	21.9.32.
Sk. V6761	Ditto	11.7.31.	Down	10.12.31.

WIGEON (*continued*).

RINGED ABROAD AS YOUNG.

<i>Ringed.</i>		<i>Recovered.</i>	
Sk. V7347	Husavik, Iceland	27.7.31.	Donegal 26.11.31.
Sk. V7316	Ditto	26.7.31.	Roscommon 2.10.32.
Sk. E837	Ditto	17.7.27.	Waterford 14.10.30.
Sk. V5281	Vopnafirdi, Iceland	3.7.29.	Kerry 3.10.30.

PINTAIL (*Anas a. acuta*), p. 184.

RINGED ABROAD AS YOUNG.

<i>Ringed.</i>		<i>Recovered.</i>	
Sk. V4718	Husavik, Iceland	30.6.30.	Dumfries 30.11.32.
Sk. V5441	Myvatn, Iceland	10.6.29.	Clare 2.1.32.

SHOVELER (*Spatula clypeata*), p. 184.

RINGED ABROAD AS YOUNG.

<i>Ringed.</i>		<i>Recovered.</i>	
L. 60792	Guelderland, Holland	28.6.30.	Norfolk 31.10.31.

TUFTED DUCK (*Nyroca fuligula*), pp. 184, 359.

RINGED ABROAD AS YOUNG OR IN BREEDING-SEASON.

<i>Ringed.</i>		<i>Recovered.</i>	
Sk. V6820	Myvatn, Iceland	4.7.30.	Orkney 12.1.32.
Sk. V7870	Ditto (breeding adult)	7.7.31.	Ditto 14.1.32.
Sk. V6861	Ditto (breeding adult)	20.6.31.	Lough Neagh 17.12.31.
Sk. V6811	Ditto (breeding adult)	27.6.30.	Limerick 18.2.31.

SCAUP-DUCK (*Nyroca m. marila*), p. 185.

RINGED ABROAD AS YOUNG.

<i>Ringed.</i>		<i>Recovered.</i>	
Sk. E1477	Husavik, Iceland	3.8.30.	Belfast Lough 10.12.30.
Sk. E1474	Ditto	3.8.30.	Cork 17.10.30.
Sk. V6803	Myvatn, Iceland	13.6.30.	Armagh 27.2.31.
Sk. V6879	Ditto	7.7.31.	Cavan —.12.31.

CORMORANT (*Phalacrocorax c. carbo*), pp. 185, 360.

RINGED GREAT BRITAIN AS NESTLINGS.

<i>Ringed.</i>		<i>Recovered.</i>	
Pembroke.	25.6.31.	Côtes-du-Nord, France	20.9.32.
Sutherland.	27.6.32.	Finistère, France	30.9.32.
Anglesey	22.6.30.	Ditto	—.11.30.
[Dulas Island]			
Antrim	14.5.32.	Ditto	13.11.32.

TURTLE-DOVE (*Streptopelia t. turtur*), p. 187.

This record was overlooked in our first list.

RINGED GREAT BRITAIN AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Hampshire	9.8.13.	Douro, Portugal	23.9.13.

TURTLE-DOVE (*continued*).

RINGED GREAT BRITAIN AS ADULTS.

	<i>Ringed.</i>		<i>Recovered.</i>
Cheshire	15.6.32.	Charente Inf., France	29.8.32
Ditto	10.8.30.	Estremadura, Portugal	—.10.32.
Ditto	8.6.31.	Cordoba, Spain	19.4.32.

NORTHERN GOLDEN PLOVER (*Charadrius a. altifrons*),
pp. 188, 360.

Except for two Norfolk records all the Golden Plovers from Iceland have been reported from the western side of the British Islands.

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
Rk. 6.435	Saudarkrok, Iceland	13.7.32.	Lewis, O. Hebrides 25.9.32.
Sk. A3140	Ditto	2.7.29.	Limerick 10.1.33.
Sk. A7396	Husavik, Iceland	27.7.31.	Lancs. 24.2.33.
Sk. A4488	Ditto	19.7.31.	Tyrone 29.9.32.
Sk. X6873	Ditto	5.7.29.	Wicklow 1.12.30.
Sk. X2795	Ditto	22.7.32.	Waterford 15.1.33.
Sk. A5368	Laxa, Iceland	5.7.29.	Mayo —.10.31.

LAPWING (*Vanellus vanellus*), pp. 188, 360.

RINGED GREAT BRITAIN AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
Cheshire	16.6.30.	Finistère, France	12.2.32.
Gloucester.	8.5.31.	Ditto	13.2.32.
Ayrshire	25.5.31.	Gironde, France	20.3.32.
Cheshire	12.5.28.	Minho, Portugal	Winter, 1932-33.
Midlothian	17.6.32.	Oporto, Portugal	25.12.32.
Westmorland	June, 1932.	Ditto	29.1.33.
Lancashire	May, 1932.	Ditto	31.1.33.

RINGED ABROAD AS YOUNG OR IN BREEDING-SEASON.

	<i>Ringed.</i>		<i>Recovered.</i>
St. A2703	Vällnige, Sweden	10.5.30.	Lincs. 4.11.32.
Sk. X10659	Sjælland, Denmark	5.6.32.	Norfolk 14.12.32.
Sk. A3854	Laaland, Denmark	17.5.29.	Lincs. 15.1.32.

REDSHANK (*Tringa t. totanus*), p. 191.

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>
Cumberland	May, 1932.	Côtes-du-Nord, France	5.8.32.

ICELAND REDSHANK (*Tringa t. robusta*).

This record is interesting as being the first ringed example of this sub-species which has been reported.

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
Sk. A7381	Husavik, Iceland	16.6.31.	Orkney 19.12.31.

CURLEW (*Numenius a. arquata*), p. 192.

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>	<i>Recovered.</i>
G. 10176D	Jämtland, Sweden	14.7.32. Lincs. —.9.32.
St. B3230	Orebrö, Sweden	3.8.30. Yorks. 23.3.32.

FÆROE SNIPE (*Capella g. færoecensis*), p. 245.

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>	<i>Recovered.</i>
Sk. G5314	Saudarkrok, Iceland	30.6.30. Mayo 16.10.30.
Sk. G11903	Hafnarfirdi, Iceland	28.7.30. Cork 16.11.30.

WOODCOCK (*Scolopax r. rusticola*), pp. 245, 360.

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>	<i>Recovered.</i>
St. E925	Scania, Sweden	6.6.32. Norfolk 23.11.32.

RINGED ABROAD AS ADULT.

H. 550.57	Hiddensee I., Pomerania	25.9.31. Galway 9.12.32.
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SANDWICH TERN (*Sterna s. sandvicensis*), pp. 247, 360.

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>	<i>Recovered.</i>
Norfolk	14.6.32.	Nord, France 19.8.32.
Ditto	30.6.32.	Ditto 4.9.32.
Ditto	1.7.29.	Somme, France 28.8.32.
Ditto	10.6.32.	Calvados, France 10.9.32.
Ditto	2.7.32.	Oporto, Portugal 22.9.32.
Northumberland	26.6.26.	Huelva, Spain 6.11.32.
Cumberland	19.6.32.	Senegal, W. Africa Winter, 1932-33.
Norfolk	28.6.30.	Portuguese W. Africa 24.4.32.

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>	<i>Recovered.</i>
Sk. S8000	Jylland, Denmark	29.6.32. Yorks. 12.9.32.

COMMON TERN (*Sterna h. hirundo*), p. 248.

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>	<i>Recovered.</i>
Lancashire	12.6.32.	Algarve, Portugal —.9.32.

BLACK-HEADED GULL (*Larus r. ridibundus*), pp. 250, 360.

This record was overlooked in our first list.

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>	<i>Recovered.</i>
Anglesey	16.6.16.	Finistère, France —.2.17.

BLACK-HEADED GULL (*continued*).

RINGED ABROAD AS YOUNG OR IN BREEDING-SEASON.

<i>Ringed.</i>			<i>Recovered.</i>	
Hs. C15152	Nr. Helsingfors, Finland	1.6.32.	Sussex	17.3.33.
T. 8372	Oesel, Estonia	June, 1932.	Middlesex	31.1.33.
R. E77808	Riems I., Pomerania	14.6.32.	Gloucester	—8.32.
R. E58464	Nr. Hiddensee I., Pomerania	—6.31.	Essex	11.3.33.
R. E82883	Brandenburg	30.6.32.	Wexford	—11.32.
G. 4454C	Gotland, Sweden	8.7.27.	Sussex	8.3.32.
G. 24420C	Mäkläppen Is., S.W. Sweden	20.6.32.	Lancs.	19.8.32.
Sk. X8943	Jylland, Denmark	12.6.27.	Cornwall	1.9.29.
Sk. A11011	Ditto	28.6.30.	Durham	19.9.32.
R. E82529	Schleswig-Holstein	9.7.32.	Middlesex	4.2.33.
R. E83542	Ditto	13.7.32.	Wilts.	2.2.33.
L. 56378	Texel, Holland	27.5.28.	Suffolk	23.1.31.
L. 79849	Ditto	7.6.30.	Kent	15.2.31.

COMMON GULL (*Larus c. canus*), p. 256.

RINGED ABROAD AS YOUNG.

<i>Ringed.</i>			<i>Recovered.</i>	
G. 9256D	Halland, Sweden	4.7.31.	Glamorgan	12.11.32.
G. 12892D	Hallands Väderö, Sweden	2.7.31.	Cornwall	16.3.32.
G. 13028D	Tylön, Halland, Sweden	29.6.31.	Hampshire	26.1.33.
Sk. K8846	Sjælland, Denmark	5.7.29.	Carmarthen	26.12.31.

LESSER BLACK-BACKED GULL (*Larus fuscus grællsii*), p. 260.

The first two records were overlooked in our first list.

RINGED GREAT BRITAIN AS NESTLINGS.

<i>Ringed.</i>		<i>Recovered.</i>	
Northumberland	26.8.18.	Agadir, Morocco	—12.18.
[Farne Is.]			
Westmorland	14.7.16.	Pas-de-Calais, France	31.7.18.
[Foulshaw Moss]			
Ditto	7.7.27.	Basses Pyrenées, France	15.4.32.
Ditto	21.7.30.	Malaga, Spain	13.11.32.
Cumberland	17.7.32.	Algarve, Portugal	14.10.32.
Ditto	5.7.31.	Huelva, Spain	5.8.32.
Lancashire	8.7.32.	Vendée, France	—10.32.
Ditto	6.6.32.	Oporto, Portugal	23.10.32.
Ditto	10.7.32.	Ditto	—10.32.
Ditto	28.6.31.	Algarve, Portugal	—1.33.

RAZORBILL (*Alca torda*), p. 266.

RINGED GREAT BRITAIN AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Sutherland	3.7.30.	Lofoten Is., Norway	June, 1931.

LAND-RAIL (*Crex crex*), p. 268.

RINGED GREAT BRITAIN AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Perthshire	25.6.32.	Gerona, Spain	1.9.32.

A NATIONAL CENTRE FOR FIELD ORNITHOLOGY.

WE very gladly support the appeal printed below. Such an organization as the proposed British Trust for Ornithology, which is to form a national centre for ornithological work in the field, is very much required.

We feel sure that the project will greatly interest our readers, the large majority of whom, being keen workers in the field, will at once realize the great value of such a centre for consultation, advice or co-operation in their work.

We hope that the Trust will be widely supported not only financially, but also by gifts or promises of books, photographs, MS. notes and other material which would be useful for reference now or in the future.

We understand that the sum of £10 will qualify the donor for Life Membership, that an annual subscription will be a minimum of 10s., though it is hoped that many will subscribe at least a guinea, and that some may be found, even in these difficult days, who will make very generous donations with a view to putting the Trust on a secure foundation. Backed by an institute such as is proposed, British field ornithology, with the many skilled and keen observers that are available, would make a notable advance, and we cannot too strongly urge every reader to get into touch with Mr. Nicholson or Mr. Tucker and assist the scheme in whatever way each can.

THE EDITORS.

AN INSTITUTE OF ORNITHOLOGY AT OXFORD.

To the Editors of BRITISH BIRDS.

SIRS,—During the past few years developments in several branches of ornithology have become extraordinarily rapid. To mention only a few instances: the attack on the migration problem through large-scale marking of wild birds, through experiments on the effect of light, temperature and other factors; the attack on distribution through intensive work on the territory theory, through bird censuses which sometimes involve more than a thousand observers, and through general ecological approaches; and the growing emphasis on the economic reactions of a bird population, may illustrate the pace and scope of the advance. All these instances point to one evident conclusion—that the demands of contemporary research have in this field outstripped the training and organization available for meeting them.

In the United States a government-run Biological Survey supplies resources and direction; here the field worker has

no such machinery, either official or unofficial, for reinforcing his individual efforts. The elementary co-operative services—a common library of books, MSS. and photographs, a clearing-house of information and contacts, a national field centre which can collaborate with other national field centres overseas, a permanent experimental reserve for long-term research—still remain to be provided.

At Oxford six years ago a series of researches was begun on the numbers, habits and economic status of certain Midland species, and these researches have recently depended to a large extent on government grants. Owing to the termination of these grants at the end of September the future of the work (papers on which have appeared, or are pending, in *British Birds*, the *Journal of Ecology*, the *Journal of Animal Ecology*, and the *Journal of Agriculture*) is imperilled. After consultations between representative field ornithologists it has been decided to try to turn the emergency into an opportunity by establishing a British Trust for Ornithology, to act as a permanent trustee and to raise through every possible channel funds to support an Institute of Ornithology at Oxford as a national centre. The Trust is seeking incorporation and has already been given or promised valuable assets in cash and in kind, including collections of MSS. whose permanent availability to research workers is of capital importance.

The Trust is appealing for £8,000 to carry it over the next five years, until permanent endowments can be arranged. Payment of donations may be spread over the whole period, and those who may be in a position to contribute or to help in any other way are urged to get in touch with the acting Hon. Treasurer, B. W. Tucker, M.A., University Museum, Oxford, or the acting Hon. Secretary, E. M. Nicholson, 58, Petty France, London, S.W.1, who will gladly give further information.

H. BALFOUR.
H. ELIOT HOWARD.
JULIAN S. HUXLEY.
F. C. R. JOURDAIN.
P. R. LOWE.
SCONE.
D. SETH-SMITH.
H. F. WITHERBY.

NOTES

WHITE-WINGED JACKDAWS IN THE ISLE OF MAN.

As the Jackdaw (*Colæus m. spermologus*) is a bird not usually subject to variation, some notes on a local variety seen at Douglas may be of interest.

These white-winged Jackdaws are best described as having on the outer primary a white spot or "mirror" exactly similar to one of the "mirrors" on the primaries of a Herring-Gull; on the under-side the wings are crossed by a broad band of white, very conspicuous when the wings are raised. When in flight the colour scheme is very similar to that of the Magpie.

The variation is constant and is not confined to one or two birds. It first came under my notice about eight years ago when I regarded it as a case of partial albinism. Since then I have seen these birds at regular intervals and they have also been observed by Mr. F. Nicholson.

On one occasion in one field alone I saw nine or ten of these birds following the plough in company with a large flock of Rooks and their normal relatives, and on another occasion saw two Jackdaws, both white-winged, nesting down a chimney. Although I have not seen so many together again, the variety still occurs regularly, and I saw single birds four times in March, 1933, while twos and threes are to be seen at longer and less regular intervals.

W. S. COWIN.

EARLY TREE-PIPITS IN SURREY.

ON March 19th, 1933, I saw a number of Tree-Pipits (*Anthus t. trivialis*) on Mitcham Common, where one was singing on the 26th. I believe early April is the normal date of arrival. I identified the birds by their slightly larger size as compared with Meadow-Pipits (*A. pratensis*), of which I saw some soon after, their pinkish-brown legs, lighter brown bill, paler feathers round the eye and less shrill alarm note.

R. S. R. FITTER.

[It seems curious with what unanimity authors, including those of the *Practical Handbook*, have avoided giving detailed dates regarding the migrations of the Tree-Pipit. It is clear, however that stragglers may be looked for in any year after April 1st and that our breeding stock arrives generally between the 8th and the end of the month, while migration is continued

till about May 14th. Arrivals before April 1st appear to be very unusual. Yarrell mentions one old record in February, but without any details; Eagle Clarke gives one on March 22nd, 1893, while one is recorded at Waltham on March 27th, 1896 (*B. of Essex*), one in Berkshire on March 30th, 1913 (*B.O.C., Migr. Report*), and one at Bexhill, Sussex, March 17th, 1922 (*B.B., XVI., p. 21*).—N.F.T.]

NESTING MATERIAL OF THE BLACKCAP.

ON June 7th, 1932, near Bangor, N. Wales, I found a nest of the Blackcap (*Sylvia a. atricapilla*) which was largely composed of moss. The nest contained four young, but after the young had flown I took the nest and examined it closely, and was surprised at the amount of moss used.

Though long acquainted with the Blackcap in Ireland, I had never before seen moss used in the construction of the nest and the majority of authors whom I have consulted make no mention of it.

In Ireland, briars are almost always selected as nesting-sites, whereas across the Channel a much wider choice seems to be made.

The bird watcher in Ireland will be disappointed should he set out to hear the Blackcap sing. Here it is unusual for the birds to pour forth that rich melody which is such a delightful feature of the English countryside.

Whatever may be the reason, the Irish Blackcap is a very poor singer. Lack of competition has been suggested as the reason for this, but there must be competition in parts of Wicklow where the birds nest freely.

JOHN S. BARRINGTON.

[Though many nests contain no moss, it figures largely in the construction of others and is recorded as nesting material in my book on the *Eggs of European Birds* (p. 305). For notes on the song of Irish Blackcap see Ussher, *Birds of Ireland*, p. 15.—F.C.R.J.]

WHITE-TAILED EAGLE IN LINCOLNSHIRE.

A JUVENILE male White-tailed Eagle (*Haliaeetus albicilla*) was killed near Sleaford on March 16th, 1933. It had frequented some woodland and gorsy country for some time and had been seen in a neighbouring parish during the winter. There is nothing to remark on the bird, which was in good condition, except that the tail-feathers were much worn.

I may say that the identification of the species was confirmed by Mr. D. Seth-Smith at the taxidermists. Efforts made to spare the bird were unsuccessful.

JOHN S. REEVE.

SANDWICH TERN IN GLAMORGAN.

THE southern coast-line of South Wales is rarely visited by any species of Tern except the Little Tern (*Sterna a. albifrons*) which has now only one small colony in Glamorgan. The migratory flight-line of the others appears to lie well off the shores of west Wales, and this applies particularly to the Sandwich Tern (*Sterna s. sandvicensis*), for although it breeds in Anglesey, on Walney Island, and further north at Ravenglass in Cumberland, there are only two records of its occurrence in the whole of South Wales and Monmouthshire, and both of these are from the extreme west.

One was picked up dead on Tregaron Bog, Cardiganshire, on June 21st, 1922 (*B.B.*, XVI., p. 88) and a party of four were seen in Newport Bay, Pembrokeshire, on June 3rd and 5th, 1928 (*B.B.*, XXII., p. 169).

It is therefore of interest to record a specimen we observed, under ideal conditions, on the shore a mile west of the Nash Lights, Glamorgan, on March 26th 1933. It appeared to be very tired and loath to take flight, permitting an approach to within 50 feet, when its black, yellow-tipped beak, black legs and feet, and maned head, together with its large size, made identification easy and certain.

When at length it took wing, its straight and even flight more resembled that of a gull than the characteristic, erratic, swaying flight of the majority of Terns.

This is the first to be recorded from Glamorgan, or in fact, from anywhere on the southern coast-line of South Wales and Monmouthshire.

GEOFFREY C. S. INGRAM.

H. MORREY SALMON.

EARLY BROOD OF MOOR-HEN IN CHESHIRE.

ON April 2nd, 1933, at Rookery Pool near Whitegate, in the Delamere Forest district, I was surprised to see a Moor-Hen (*Gallinula ch. chloropus*) accompanied by at least two chicks, which were in down and appeared to be quite a week old.

S. B. WOOD.

REVIEW.

Birds from the Hide. Described and Photographed by Ian M. Thomson. Illustrated. (A. & C. Black.) 12s. 6d. net.

MR. THOMSON is well known as a very excellent bird photographer and in this book he has given us of his best. There are sixty-three full page plates well reproduced in photogravure, each with an explanatory paragraph opposite. The subjects are varied, but most of the birds are large ones and roughly they may be divided as inhabitants of the Norfolk Broads or the Shetlands. It is difficult to pick any out for special mention as all are so good. We like best the Bittern very intent on feeding its young in Plate 4, the Water-Rail in Plate 10 so completely at her ease, Montagu's Harrier playing with a piece of reed (Plate 14), the cock Bearded Tit feeding the hen on the nest (Plate 18), Short-eared Owl approaching the nest (Plate 20), Sky-Lark and young and the series of Curlew and young, Hooded Crow on the nest (Plate 45), Twite feeding young and the Great and Arctic Skuas with their young. All these are as perfect as such "still" photographs can be, and they show the birds in very natural unstrained attitudes.

In some one hundred pages of letterpress Mr. Thomson tells us interesting facts about the birds that he has been able to observe during the course of his photographic work both in and out of the "hide."

Mr. Thomson's series of photographs is certainly one of the best we have ever seen.

LETTERS.

UNDOMED NEST OF CHIFFCHAFF.

To the Editors of BRITISH BIRDS.

SIRS,—In June, 1919, I found an undomed nest of a Chiffchaff (*Phylloscopus c. collybita*) with three young birds in a stunted hawthorn bush growing on a bankside near Wetheral, Cumberland. It was an open nest built of grasses and lined with feathers and a few hairs, but no signs of a dome. Both adults were identified. R. H. BROWN.

HABITS OF WOODPECKERS.

To the Editors of BRITISH BIRDS.

SIRS,—With further reference to Mr. N. Tracy's statement in the January issue (*antea*, p. 257) that he had never seen any of the three kinds of British Woodpeckers drink or bathe, it may perhaps be interesting to note that on April 2nd, 1933, I watched a Green Woodpecker (*Picus v. virescens*) feeding for about fifteen minutes, and during this time it deliberately went to a hole in a branch where some rain-water had collected, and took fourteen beakfuls.

This particular bird behaved rather curiously as, instead of progressing upwards, practically all its movements were in a downward direction, tail foremost, which habit I had previously noticed only occasionally.

I was particularly interested in Mr. B. B. Rivière's remarks with regard to the sucking of eggs by the Great Spotted Woodpecker (*Dryobates m. anglicus*), in the last issue, in view of the fact that in April, 1928, I took a bird of the above species from a trap which had been baited with an egg.

Quite a number of birds appear to be accused of egg stealing, and sometimes not without reason. Last spring I set a trap for a Magpie on a small island in a river, and, after catching one Magpie, found the next victim to be an adult Moorhen (*Gallinula c. chloropus*), which I believe has previously been accused of destroying eggs, though on somewhat slender evidence.

C. WONTNER SMITH.
YEADON, LEEDS.

REDSHANK EATING FISH.

To the Editors of BRITISH BIRDS.

SIRS,—With regard to Col. W. A. Payn's note (*antea*, p. 314) on a Redshank eating fish, it is my experience that the young Redshanks that are reared on the coastal marshes of the Solway Firth are occasionally fed on small fish of average length about one inch.

R. H. BROWN.

INDEX.

NOTE.—The nomenclature followed in this volume is in accordance with the "Systematic List" printed at the end of the Volume II. of *A Practical Handbook of British Birds* and reprinted in *A Check-List of British Birds*, and the additions and alterations appearing on pages 101-2 of Volume XXII., pages 24 and 25 of Volume XXIV., and pages 8 and 16 of Volume XXVI. of *British Birds*.

- Accentor, Alpine, in Cornwall, in June, 97; at Cambridge, 235; seen in Kent, 275.
acuta, *Anas*, see Pintail.
esalon, *Falco*, see Merlin.
eruginosus, *Circus*, see Harrier, Marsh.
affinis, *Sitta e.*, see Nuthatch.
alba, *Crocethia*, see Sanderling.
alba, *Tyto a.*, see Owl, Barn-
albeola, *Bucephala*, see Duck, Buffel-headed.
albicilla, *Haliaeetus a.*, see Eagle, White-tailed.
ALEXANDER, H. G., Notes on Birds at North Worcestershire Reservoirs, 1930 and 1931, 24; Whimbrel in Warwickshire, 26; North Worcestershire Reservoirs, 251; Common Sandpiper, Greenshank, and Dusky Redshank wintering in South Devon, 337; Letter on Notes and Behaviour of Green Sandpiper, 139.
Alexandrinus, *Charadrius*, see Plover, Kentish.
Alle, *Alle a.*, see Auk, Little.
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altifrons, *Charadrius a.*, see Plover, Northern Golden.
luco, *Strix*, see Owl, Tawny.
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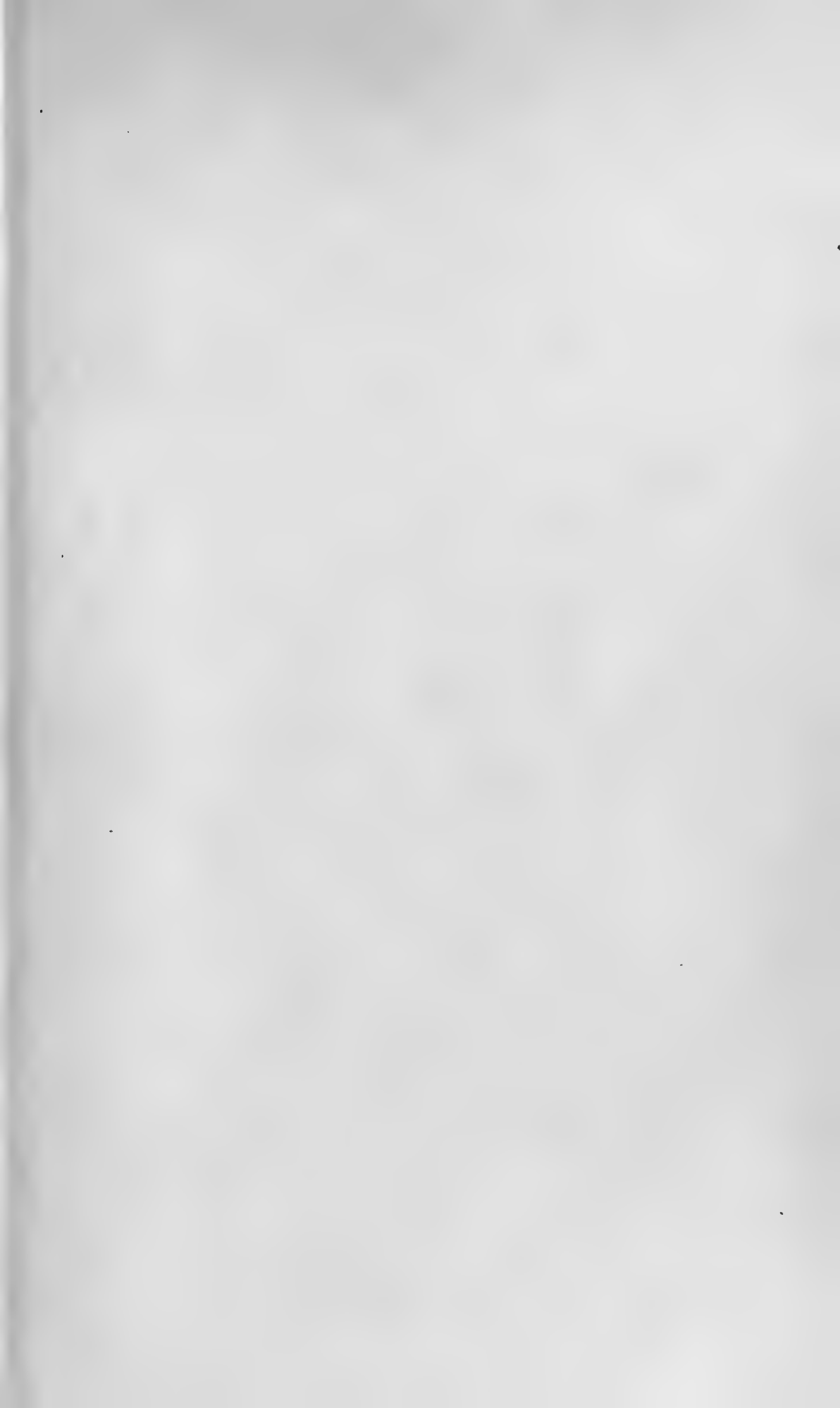
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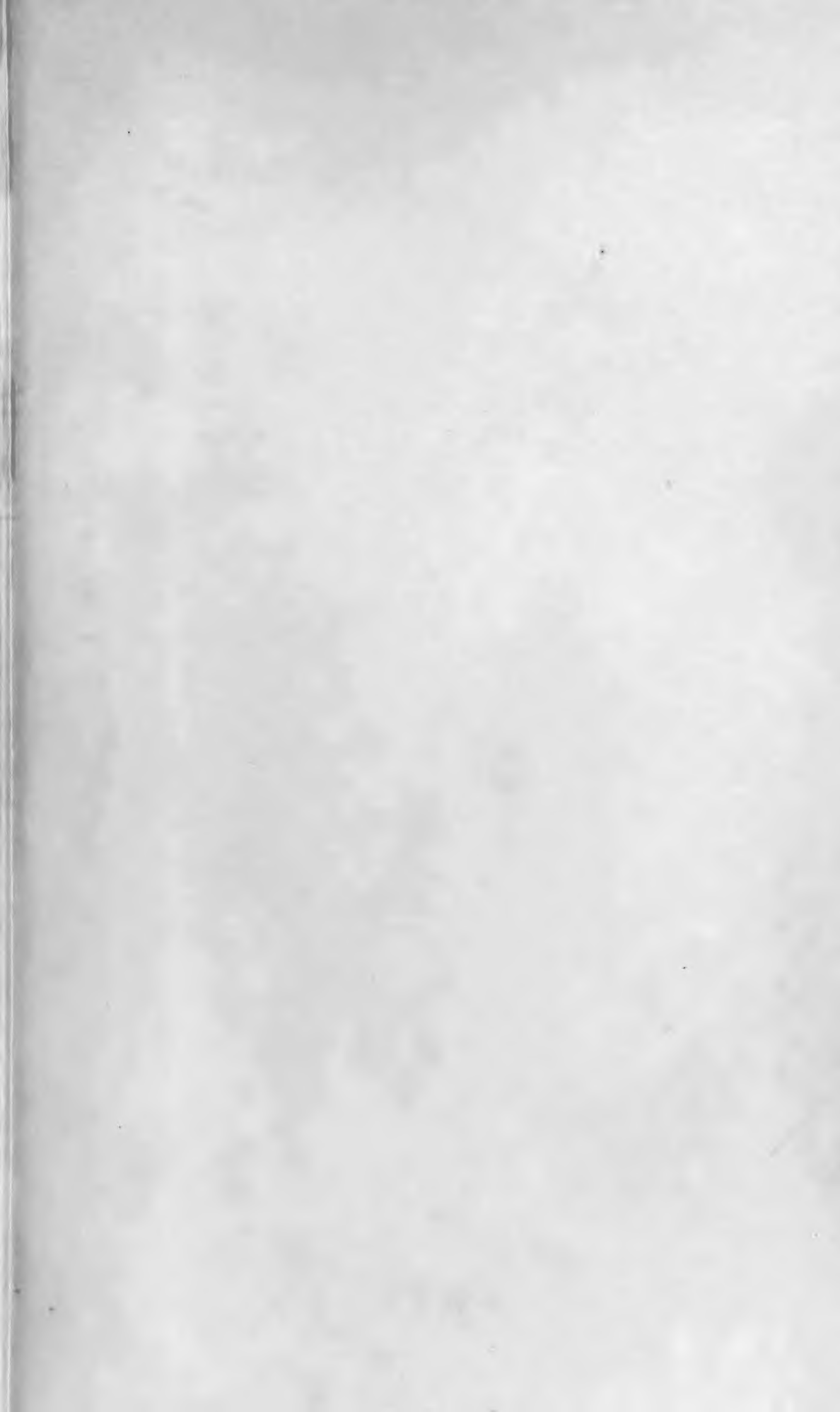
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